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CONTENTS

		PAGE
Mental Age Distribution in School Progress	*Howard J. Banker*	273
Efficiency of the Vineland Adjustment Score Card for Measuring Social Behavior	*P. J. Oosthuizen*	280
Remedial Teaching for Improvement in Handwriting	*Sherman D. Scruggs*	288
The Teaching of Modern Foreign Languages: A National Survey	*Robert Herndon Fife*	296
The Economic Status of Teachers College and University Faculties	*Frederick L. Whitney* and *Arthur K. Goodman*	308
Shorter Articles		319
Editorials		330
Reviews		332
Research Abstracts and Bibliographies		338
Research News and Communications		343

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JOURNAL OF EDUCATIONAL RESEARCH

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JOURNAL *of* EDUCATIONAL RESEARCH

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MENTAL AGE DISTRIBUTION IN SCHOOL PROGRESS

HOWARD J. BANKER
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WHILE seeking a basis for a student's ability index, the writer had occasion to develop the following curves of so-called "mental age" distributions that may be of interest to educators and psychologists, although presumably involving no principles that are not already fairly well understood. The curves show the successive distribution of the average "mental age" of the students as actually determined for each year of school life from the first primary grade throughout the elementary school, the high school and the college, a period of some sixteen consecutive years. The origin of the coördinates in plotting these curves was taken as theoretically at six years prior to entrance into the first school grade and at zero of mental age, that is approximately at birth in both categories. As actually drafted the axes lie parallel to the sides but entirely off the graph. Progress through the educational system is laid off on the horizontal in year intervals, and the "mental age" is laid off in like intervals on the vertical. The "mental age" was in all cases determined, as near as the data would admit, for the mid-year point of each year of school progress. Grades I to VIII are the successive years of normal progress through the elementary school, IX to XII through the high school, XIII to XVI through the college, and XVII to XX may be considered to be post-graduate years.

These grades are not to be confounded with the chronological ages of the students which have a similar succession but are not of like value. If, however, we may assume the usual theoretical assumption that all the children of the general population actually enter the first grade at the time nearest their sixth birthday, and that all are advanced regularly from grade to grade, the above intervals would represent the mean chronological age of the school population throughout the educational period. If, further, we may assume that "mental age" as measured by Binet units is a continuous uninterrupted process of growth for an in-

definite period, then it is evident that the mean "mental age" per grade would be given by a straight line drawn at an angle of exactly 45 degrees to the axes of coördinates as shown on the graph by the broken line. This line may, therefore, be taken as a convenient theoretical norm for reference. In this connection it may be observed that if at any point mental growth should cease without other disturbance, this broken line would continue indefinitely from that point parallel to the horizontal.

It was found, by using Binet tests administered by Dr. Terman and his co-workers in a typical school population of somewhat over 1,000 children, that for the eight grades of the elementary school the distribution of the mean mental-ages per grade closely approximated a straight line at an angle of about 46 degrees from the horizontal.[1]

When it came to finding the mean mental-age per grade for the higher institutions, satisfactory data were difficult to obtain. Binet tests are not well adapted to the older students and in fact the expression "mental age" has little meaning except as a conventional term for a Binet score, in which sense we are here using it. Binet tests have not, therefore, been generally attempted in higher institutions and scarcely any data have been published. On the other hand, since the World War the Army Alpha group test has been extensively employed with high-school and college students but much of the published data are very imperfect and inadequate for our purpose. From the little that could be utilized, median scores were obtained and transmuted into equivalent Binet mental-ages by the Kohs-Proctor norms.[2] Because of the lack of uniformity in these reports median or mean is indiscriminately used here. They differ little in this work, though the median is commonly slightly higher than the mean.

From this material the average mental-ages per year were determined in eight institutions of high-school rank including vocational and private preparatory schools as well as regular public high schools, besides one group of 108 state high schools of Minnesota reported *en masse*. The data are presented in Table I.

---

[1] Banker, Howard J. "Age Distribution in the Grades as a Measure of Mentality." *Journal of Educational Research*, XIII (March, 1926), pp. 155-170.

[2] Proctor, William M. "The Kohs-Proctor Mental Age Norms for the Army Alpha Scale." *Journal of Educational Research Monographs*, No. 1 (October, 1923), pp. 115-118.

TABLE I

MEAN OR MEDIAN MENTAL AGES PER GRADE FOR HIGH-SCHOOL STUDENTS AS DETERMINED BY MEDIAN SCORES IN ARMY ALPHA TESTS TRANSMUTED TO EQUIVALENT "MENTAL AGES" BY KOHS-PROCTOR NORMS AND REDUCED, AS FAR AS DATA WOULD PERMIT, TO A MID-YEAR STANDARD

Authority and Citation	Institution	Date of Test	GRADE 9			GRADE 10			GRADE 11			GRADE 12		
			No. of pupils	Median score	Equivalent mental age at midyear	No. of pupils	Median score	Equivalent mental age at midyear	No. of pupils	Median score	Equivalent mental age at midyear	No. of pupils	Median score	Equivalent mental age at midyear
Madsen & Sylvester *Sch. & Soc.* 10: 407	Sioux City, Ia.	May (15) 1919	443*	107.9	15.93	327*	122.1	16.99	250*	130.2	17.55	210*	137.6	18.04
"	Madison, Wis.	"	314*	96.0	15.16	296*	109.7	16.08	227*	122.4	17.18	165*	121.2	17.10
"	Rockford, Ill.	"	500*	94.0	15.04	368*	107.0	15.90	349*	119.7	16.91	260*	123.8	17.18
Madsen, I. N. *Sch. & Soc.* 11: 625	Omaha, Neb. Central	Spring, 1920* (May 1)	611*	107.0	15.90	419*	122.0	16.98	341*	132.0	17.75	280*	135.0	17.95
"	Omaha, Neb. Commerce	"	647*	84.5	14.49	350*	93.8	15.13	244*	101.2	15.60	145*	110.8	16.24
"	Omaha, Neb. South	"	203	92.9	14.87	82	113.6	16.50	74	118.3	17.02	69	110.0	16.46
Mohlman, Dora K. *Sch. & Soc.* 16: 359	Ypsilanti, Mich.	Mar. (13) 1921	32	105.0	15.96	38	111.0	16.39	26	113.0	16.44	25	127.0	17.38
"	108 high schools of Minnesota	1920-1921 (Feb. 7)	2436	93.3	15.22	1729	105.4	16.03	1393	110.9	16.39	1140	120.0	17.09
Anderson, John E *Sch. & Soc.* 16: 723	Hotchkiss Private Preparatory	Jan. (17) 1922	60	126.0	17.47	60	144.0	18.64	83	154.0	19.28	75	156.0	19.41
Weighted Averages			5246**	95.7	15.27	3669**	109.1	16.19	2987**	117.4	16.79	2369**	124.2	17.27

*According to Miss Mohlman
**Total number of pupils.

TABLE II

MEAN OR MEDIAN MENTAL AGES PER YEAR FOR COLLEGE STUDENTS AS DETERMINED BY MEDIAN SCORES IN ARMY ALPHA TESTS TRANSMUTED TO EQUIVALENT "MENTAL AGES" BY KOHS-PROCTOR NORMS AND REDUCED, SO FAR AS DATA WOULD PERMIT, TO A MID-YEAR STANDARD

Authority and Citation	Institution	Date of Test	FRESHMAN			SOPHOMORE			JUNIOR			SENIOR		
			No. of cases	Median score	Equivalent mental age at midyear	No. of cases	Median score	Equivalent mental age at midyear	No. of cases	Median score	Equivalent mental age at midyear	No. of cases	Median score	Equivalent mental age at midyear
Hill, David S. *Sch. & Soc.* 9: 542	Univ. of Ill.	Mar. 6, 1919	1145	142.9	18.51	586	145.2	18.68	506	145.6	18.70	365	148.9	18.92
Roberts & Brandenburg *Sch. & Soc.* 10: 776	Purdue Univ.	Jan. 30, 1919	588	124.4	17.20	253	129.8	17.66	167	131.8	17.80	154	133.0	17.88
Noble and Arps *Sch. & Soc.* 11: 233	Univ. of Ohio	Oct. 10, 1919	2545	130.3	17.85	1346	137.6	18.23	1007	140.4	18.44	760	144.3	18.70
Filler, Mervin G. *Sch. & Soc.* 10: 208	Dickinson College	(Feb. 7)	72	141.0	18.40	61	156.0	19.40	41	153.0	19.20	39	153.0	19.20
Hunter, H. T. *Sch. & Soc.* 10: 437	South. Meth. Univ.	(Feb. 7)	128	127.0	17.47	79	114.0	16.60	54	123.0	17.20	41	132.0	17.80
Weighted Averages			4478**	132.8	17.94	2325**	138.3	18.26	1865**	140.8	18.43	1359**	144.1	18.65

**Total number of cases.

As was to be expected, enormous variations are evident in the value of the mean ages for the different institutions, yet they all show like tendencies in their distributions. In like manner Table II was compiled from reports of Army Alpha tests in five institutions of collegiate rank, the data as originally published being more complicated by reason of departmental groupings in some of the universities and were far more inadequate and irregular than the data from the high schools. With all this material the mean mental ages per year were determined and the progressive distribution through the educational period plotted as shown by the heavy line in our chart. The last three post-graduate years are based on the report of a single test from one institution.

As previously noted this line through the elementary grades runs upward at an angle of about 46 degrees from the horizontal and a little above the theoretical norm of 45 degrees. On entering the high-school period the line rises abruptly to a higher position on the scale. Apparently this rise above the norm, at first gradual and then sharp, is due to a more or less constant sifting out of the duller students in the elementary grades followed by a severe selection of the better mentalities on entrance to high school. Then a change begins. From the first to the second year of the high-school period the line has a slope of only about 42½ degrees, less than that for the elementary school and in fact a little less than that of our theoretical norm. Evidently some new force is beginning to be operative, and at the next year interval the line drops to a slope of about 31 degrees, a very decided break; the year following the slope is less than 25 degrees. It is evident that during the high-school period, in spite of the selection toward a higher mean mental age due to a more or less constant falling out of the weaker mentalities, there is a gradual and rapid bending of the mean mental age curve toward the horizontal and this deflection is most acute in the second year of the high-school course.

On entering the college period the curve is again displaced and abruptly strikes a higher level due to a more or less severe entrance selection, yet during the succeeding years the curve persists in its continuity of form approaching the horizontal. For the Freshman to Sophomore interval the slope is about 17¾ degrees, somewhat less than for the last high-school year in spite of the slaughter of collegiate ambitions supposed to occur with the close of the Freshman year. The next year the curve continues its depression to an angle from the horizontal of only about 9½ degrees. With the last collegiate year there appears to

be, with these data, a slight rise, but for the final post-graduate year the line is essentially horizontal. For these latter years the data are especially inadequate and, presumably in consequence, the results more variable.

Altogether, our curve of mean mental age in the school population appears to respond to the operation of at least two principle forces one tending to raise the mean above the theoretical norm for the general population and the other depressing the curve toward the horizontal. The first would seem to be chiefly the result of selection due to the dropping of those mentally inadequate to meet the educational requirements of the schools. This selection is characterized by a gradual and more or less continuous sifting out of the mentally deficient throughout the whole educational system accentuated at such intervals as entrance to high school, college, and probably post-graduate work by an abrupt, severe selection of the more competent students that results in a sharp displacement or fault in the continuity of the curve of mean mental-age distribution. The second and opposing force, serving to depress the curve, is not evident until the high-school period, and it gives an indica-

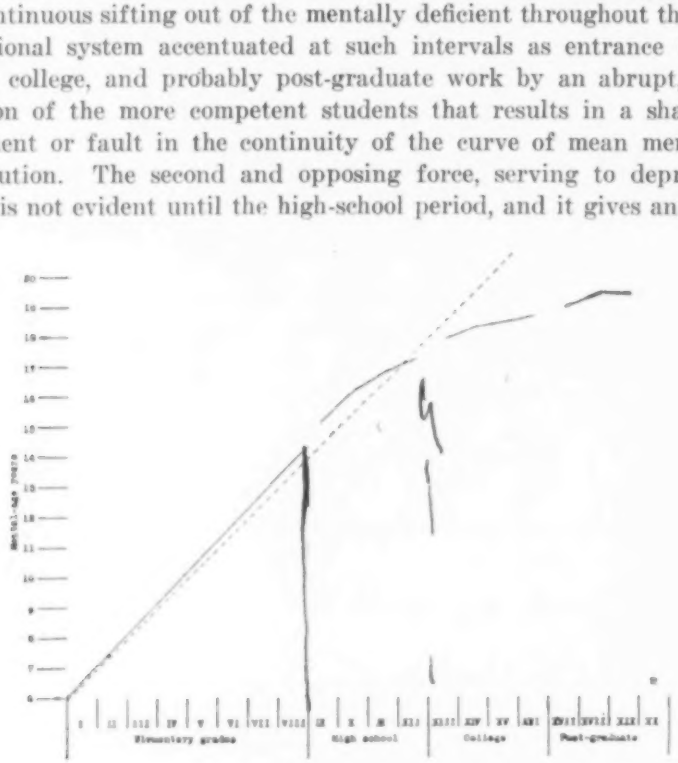

FIGURE I

CURVE OF MEAN MENTAL AGE DISTRIBUTIONS IN AN AGGREGATE OF EDUCATIONAL INSTITUTIONS

Horizontal scale equals year intervals or grades of school progress. Vertical scale equals mental-age in years.

tion of being largely due to the gradual but rapid cessation of mental growth associated with the functional changes of adolescence. The mean time for this process in the school population would appear to be, from these data, about the second year of the high-school period. This corresponds well with the prevailing views of psychologists as to the period of mental maturity.[3]

The practical manifestation of this change in the mental age curve is spread over several years partly because time is a factor in all physiological processes and partly because the onset and progress of mental maturity varies with each individual. After this period the curve tends to approximate more or less closely to the horizontal from which it is deflected to a somewhat higher angle by the continuing effects of selection throughout the progress of the educational life and presumably to the end of the personal intellectual age. Crude though the material for this work has been it is highly suggestive of an interesting research when a sufficient body of properly organized data is gathered from systematic and reliable intelligence tests throughout our school population. It, at least, furnishes illustrative material for Terman's discussion on "The Intelligence of School Children" pages 75 to 91 and 153 ff., and may offer a line of approach to the problem of mental growth and maturity.[4]

[3] Kohs, S. C. "Intelligence Measurement." (New York: Macmillan Company, 1927), pp. 237-262.

[4] Otis, Arthur S. "Statistical Method in Educational Measurement." (Yonkers-on-Hudson: World Book Company, 1926), pp. 138-147.

EFFICIENCY OF THE VINELAND ADJUSTMENT SCORE CARD FOR MEASURING SOCIAL BEHAVIOR

P. J. OOSTHUIZEN
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EARLY in 1928 two articles were published by Lloyd N. Yepsen, in which he claimed to have evolved a method whereby the "social behavior of an individual in relation to his environment" could be measured quantitatively. Instead of descriptive adjectives, such as "very good," "good," "fair," "poor," "very poor," or numerical designations based on qualitative judgments, this device utilizes clear statements as to what the individual actually does and as to the attitude of others toward him. These statements, which were selected after "careful clinical analyses of individual deviations in a large group of children," are printed on an "Adjustment Score Card." This card, at present, consists of fourteen major items, subdivided into from four to seven minor categories under the main headings, which gives a total of 75 objective statements of social adjustment.

The device is applicable in either individual or group study. In scoring, the *one* statement under each of the major headings which is most characteristic of the subject must be checked by the "informant," or scorer. For example, under the main heading, *Attitude Toward Others*, one of the following statements must be checked: (a) Is cruel, a "bully." (b) Coöperates, is considerate of others. (c) Makes the best of any situation. (d) Rough but means well. (e) Coöperates, is considerate, a leader.

If (a) is checked, the subject scores 2 points; if (b) is checked, he scores 12 points, and so on. The total score ranges from 24 to 150 points, and "the theoretically well-adjusted child can obtain a score of 100." The application of the method is fairly easy after the subjects have been carefully observed.

If this method fulfills its purpose, it undoubtedly forms a very important contribution, not only to psychiatry and psychology, but also to educational practice in general. In order to test the efficacy of the Card, therefore, an investigation was carried out in the Robert Bowie School at Tempe, which is situated in a so-called "Poor White" area, or suburb of the city of Bloemfontein, the capital of the Orange Free State Province of the Union of South Africa.

A considerable portion of the money donated by the Carnegie Corporation of New York City for social service work in South Africa is being used for research work on the "Poor White" problem, which is one of the most serious that is confronting South Africa today, and is of interest to sociologists and educators in many countries. One of the chief contributing factors in this problem has been the inability of many Europeans to adapt themselves, especially since the beginning of this century, to the rapidly changing conditions of social and economic progress in this country. If the Yepsen method proved efficient, it was felt that its use would be a definite aid in the investigations being carried on in this connection, since an objective method of measuring social adjustment and behavior should greatly facilitate remedial measures.

There are certain conditions, however, which must be satisfied by any method purporting to measure social behavior quantitatively. The most important of these requirements, with reference to which Yepsen's method is discussed, may be stated as follows:

1. The method must be free from subjective opinions as expressed in descriptive adjectives or numerical designations based on qualitative judgments.

As already indicated, the Adjustment Score Card satisfies this requirement.

2. It must not test intelligence. It is well known that many persons of low intelligence are well adjusted socially, and persons of high mental level who are socially maladjusted are not uncommon. A true measure of social behavior must therefore show little or no correlation with mental test scores.

Yepsen's data satisfy this requirement. In testing 50 children, he found the coefficient of correlation between the Adjustment Score Card results and the Binet test age to be .05, "while the correlation between scores and Binet intelligence quotients was .15." These are the raw coefficients of correlation, and no conclusions as to whether they are significant or not can be confidently drawn from them. They must first be corrected for attenuation.

If the reliability coefficient of the Adjustment Score Card be taken as .77, as found by Yepsen, and if the reliability coefficient of the Binet tests be assumed to be .85, a figure which is in fair agreement with the reliability coefficients of most standardized tests, the raw coefficients of .05 and .15, when corrected for attenuation, become .062, P.E. .094, and .185, P.E. .092, respectively. If the reliability coefficient of the Adjust-

ment Score Card, which we found to be .86, be substituted for Yepsen's .77, then the raw coefficients of .05 and .15, when corrected for attenuation, become .059, P.E. .086, and .176, P.E. .084, respectively. In both cases the coefficients of correlation, corrected for attenuation, are insignificant and show that there is very little or no correlation between the scores of the Adjustment Score Card and intelligence as measured by the Binet tests.

3. It must be valid, in that it measures that which it purports to measure; viz., the individual's social behavior in relation to his particular environment. The scores of the Adjustment Score Card must therefore be in agreement with a recognized and valid criterion of social behavior.

The judgment of competent observers who are well acquainted with the individuals tested constitutes such a criterion. As far as the behavior of school children in relation to their scholastic environment is concerned, the school teachers are undoubtedly the most competent observers; and in the Robert Bowie School investigation their judgment was taken as the major criterion. Sixty subjects were judged by their teachers on a 10-point scale, and the coefficient of correlation was calculated between the Adjustment Score Card results and the teachers' judgments as expressed by the scores assigned on the point scale. It was found to be .68.

After an interval of three weeks, the subjects were again rated on the point scale by the same teachers, and the reliability coefficient of their judgments was calculated and found to be .83. Having already found the reliability coefficient of the Adjustment Score Card to be .86, it was possible to correct for attenuation the raw coefficient of correlation, .68, and the true coefficient of correlation between the Adjustment Score Card and the major criterion was found to be .81, P.E. .030.

As a minor criterion of behavior, the combined judgment of twenty-two senior children of the school was taken. The evidence of children is admittedly less reliable than that of adults, and it was expected that the children's judgment on the behavior of the sixty subjects would be a less satisfactory criterion than the judgment of the teachers. Since the effect on the correlation, however, due to errors of estimation, can be eliminated by correcting the raw correlation for attenuation, it was felt that if the children's judgment instead of that of the teachers were to be taken as the criterion, the results thus obtained should be in agreement with what was found above. The senior children were therefore

instructed to judge the subjects on the point scale. This was also repeated after an interval of three weeks.

The coefficient of correlation between the results of the Adjustment Score Card (as checked by the teachers) and the judgment of the children, the minor criterion, was .57, while the reliability coefficient of the minor criterion was .64. Again, taking the reliability coefficient of the Adjustment Score Card to be .86, the raw coefficient (viz., .57) was corrected and found to be .77, P.E. .036. This result is in fair agreement with what was expected and found above. The Adjustment Score Card results, therefore, show a high degree of correspondence with both criteria of behavior.

4. It must be reliable in that it yields consistent results. The Robert Bowie School investigation was carried out as follows:

Lists of the "best," "average," and "worst" children in the school were submitted by the principal and assistants. From these returns a master list was compiled, containing twenty "best," twenty "average," and twenty "worst" children. The Adjustment Score Card was then checked for these sixty children by seven different teachers, including the principal, each informant checking the card for the children best known to him. After an interval of three weeks the survey was repeated.

The results obtained tallied with those of Yepsen in public schools, state schools for delinquents, and so on. For example, by the Bravais-Pearson formula, the coefficient of correlation between the scores obtained by us in the first and second surveys was .86, P.E. .023. In testing fifty children, Yepsen found the coefficient of correlation between the first and second surveys to be .77, P.E. .040. These figures are in fair agreement with the reliability coefficients of most standardized intelligence tests, and the Adjustment Score Card method may therefore be considered sufficiently consistent.

The consistency is further proved by the fact that in all cases Yepsen found "a complete cleavage" between the "best" and the "worst" groups, the "average" group showing considerable overlap with the other groups; while in our case the "worst" group, with the exception of one boy, was also clearly differentiated from the "best" group, the "average" group also overlapping on both ends.

The exception was the score of the boy mentioned above. In the master list he was placed in the "worst" group. According to the Adjustment Score Card results, he appeared well in the "best" group. This inconsistency considerably disconcerted us, especially when it was felt,

on reconsidering the case, that this boy had been correctly placed in the "worst" group of the master list, though the reasons for so placing him were rather vague. It was contended that "he is the leader in all the mischief;" that, though courteous, "there is always something in his attitude that verges on impertinence;" that "he is mostly inattentive and somehow always disturbs the rest of the class, but that it is difficult to pin him down to any definite transgression;" and so on.

An inspection of the Adjustment Score Card revealed that the item "Choose him as leader" was checked, under the major heading, *Attitude of Others Toward Him*. For this item he scored 13 points, whereas the average score under this major heading was 4.6 for the rest of the group. The informant who scored the card stated that this item was checked because the boy was a leader in many anti-social activities. The meaning of the item "Choose him as leader" had, therefore, been misinterpreted. Perhaps the item, as it stands, is ambiguous, and it is suggested that this item be expanded into two statements, more or less as follows: *A leader in activities for good* (score 13), and *A leader in activities for evil* (score 1). The same applies to the item, *Accept him as leader*.

Under the main headings of *Truthfulness* and *Language and Language Attitude*, the items "Not known to tell falsehoods" and "Always courteous, good language" were checked. For these he scored 7 points each, while the average scores of the rest of the group were 1.0 and 3.6, respectively. Further observation and investigation showed that this boy is a consummate little liar, and often profane in language, but, being intelligent, he succeeded in evading detection. If the correct items had been marked under the three headings mentioned above, his score would have been reduced by 24 points, with the result that "a complete cleavage" would have been found between the "worst" and the "best" groups.

The case cited above is instructive in that it illustrates the difficulty of advancing sufficient reasons for a person's maladjustment as long as we rely on general impressions in reporting on his behavior. A careful analytic picture of the subject is necessary, and this can be obtained only if the informant observes him with a definite scheme in mind. Such a scheme is supplied by the Adjustment Score Card, if checked after the subject has been correctly observed. This can be done only by an informant trained in the use of the Card.

The Adjustment Score Card method is valuable and effective, but it is not fool-proof. Training in its use will, however, amply compensate the informant for his pains, giving him an analytical picture of the con-

duct and an insight into the personality of his subject that could not otherwise be obtained. The knowledge thus gained will be valuable in guiding school principals, etc., not only in recommending pupils for employment at the termination of their school careers, but also in all remedial measures that may be applied.

The results of the two surveys in the Robert Bowie School are shown in the following percentile graph, the curves having been slightly smoothed:

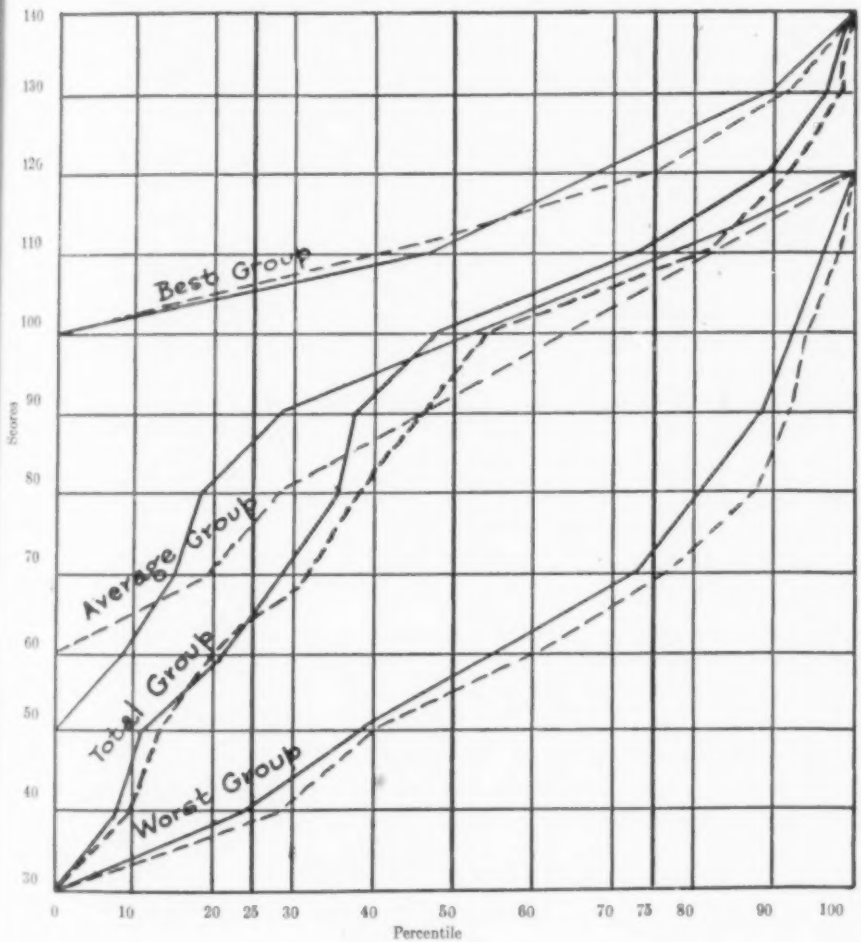

FIGURE I

PERCENTILE DISTRIBUTION OF BEHAVIOR SCORES. BROKEN LINES SHOW RESULTS OF FIRST SURVEY; CONTINUOUS LINES SHOW RESULTS OF SECOND SURVEY

An inspection of the curves shows a very close agreement between the results of the two surveys, the median scores and quartile deviations being as follows:

	Median	Quartile Deviation
Best Group, 1st Survey	112.5	7.0
Best Group, 2nd Survey	111.5	8.9
Average Group, 1st Survey	92.3	14.4
Average Group, 2nd Survey	99.0	10.9
Worst Group, 1st Survey	54.5	14.9
Worst Group, 2nd Survey	57.0	15.5
Entire 1st Survey (all three groups)	95.0	21.5
Entire 2nd Survey (all three groups)	101.0	23.5

In all cases, whether the three groups be taken separately or collectively, there is a close agreement between the medians as well as between the quartile deviations of the first and second surveys. The agreement is closest in the case of the "best" and "worst" groups, while it is less marked in the case of the "Average" group. This was expected because of the difficulty in differentiating confidently between the members of this group.

The curves also indicate that, on the whole, the informants reported more favorably on the conduct of the subjects during the second than during the first survey. It is difficult to account for this. The behavior of the subjects may have improved during the three weeks' interval between the two surveys, but it is doubtful whether this factor, if it existed, is sufficient to explain the curves, especially in view of the fact that practically no improvement is observed in the case of the "best" group. The improvement is slightest, but definite, through the whole of the "worst" group, but it is most marked in the case of the "average" group, except at the extreme lower end, where the reported conduct during the second survey is less favorable than during the first. In addition to the possible actual improvement in the conduct of the subjects, the effect on the informants' practice in using the Adjustment Score Card is probably a further factor to explain the more favorable report during the second survey. It is therefore suggested that informants trained in the use of the method will report even more consistently on the conduct of the subjects than in our investigation. Our results, however, definitely show that the method under consideration is sufficiently consistent to warrant its efficiency in estimating the subjects' behavior.

In summary, the method would seem to satisfy all the conditions stipulated. This, however, does not mean that the method and technique can-

not be further improved. The author himself states that the method is certainly not perfect, and that he is still working on its improvement. Even in its present form, however, the claim that the method is workable and efficient in objectively measuring conduct is fully justified, and its use will undoubtedly be a valuable aid to all who are aiming at remedial measures in schools, labor colonies, reformatories, and in all departments of child welfare and social work.

REFERENCES

Yepsen, Lloyd N. "Measuring Social Adaptation." *Journal of Juvenile Research*, XII (September-December, 1928), pp. 254-260.

"The Measurement of Social Behavior." *Journal of Psycho Asthenics*, XXXIII (1928), pp. 124-131.

"Objective Estimation of Social Behavior." *Training School Bulletin*, XXV (May, 1928), pp. 33-41.

"A Score Card of Personal Behavior." *Journal of Applied Psychology*, XII (February, 1928), pp. 140-147.

Eccles, August K. "A Modification of the Vineland Adjustment Score Card." *Training School Bulletin*, XXVI (February, 1930), pp. 161-170.

Owens, Albert Alexander. *The Behavior-Problem Boy: A Socio-Educational Survey*. (Philadelphia: University of Pennsylvania, 1929), 188 pp.

REMEDIAL TEACHING FOR IMPROVEMENT IN HANDWRITING

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THIS study is a report of an experiment that was conducted among Negro children to determine whether greater improvement could be effected in handwriting by the method of corrective individual practice upon faults revealed through diagnosis than by group instruction as outlined in the course of study for them.

Two fifth-grade classes were selected in two Kansas City schools, one in one school and one in another. These schools were located in districts having similar family and community interests, and were equated on the basis of general intelligence by the use of the Illinois General Intelligence Scale. Table I indicates the distribution of intelligence quotients for each class. One class, containing 33 pupils, was used as the experimental group in which the individual corrective practice method was used, and was designated as Class A. The other class, Class B, with 28 pupils, was the controlled group that followed instructions as given in the adopted course of study.

Because of the wider range of intelligence quotients in Class A, it was decided to select a number of pupils from this class whose intelligence quotients were more comparable with a like number in Class B. Twenty pupils were selected from each class. The twenty in Class A were designated as A-20, and those in Class B were designated as B-20. The median intelligence quotient in A-20 was 102.85, and in B-20, 102.5. This comparison is seen in Table II. These pupils were not separated from the rest of the class in either group, but were taught and treated in the same manner. The selected pupils were not known to the teachers who taught them.

On December 2, a test in handwriting (Test I) was administered to both classes. The test sentence was as follows: "As I was hunting in the woods a quick brown fox jumped over my lazy dog." This sentence was selected because it contained all of the letters of the alphabet. Before the papers were collected, the pupils were given numbers to put on their papers in place of their names. No other marks of identification were placed on the papers.

These test papers were scored by a teacher who was entirely innocent of any knowledge of the experiment. She was selected because of her

excellent judgment of quality in handwriting. The papers of both groups were thrown together and scored as one group, the Ayres Scale

TABLE I

NUMBER OF PUPILS AND THEIR INTELLIGENCE QUOTIENT SCORES (ILLINOIS GENERAL INTELLIGENCE SCALE) FOUND IN CLASS A AND CLASS B

Score	Class A	Class B
145-Up	1	..
140-144	..	..
135-139	1	..
130-134	..	..
125-129	1	1
120-124	2	2
115-119	1	3
110-114	2	..
105-109	2	2
100-104	7	4
95- 99	5	5
90- 94	2	1
85- 89	2	2
80- 84	3	3
75- 79	2	..
70- 74	1	1
65- 69	..	..
60- 64	..	3
55- 59	1	1
Number of Pupils	33	28
Median IQ	100.35	98

TABLE II

PAIRING OF TWENTY PUPILS IN CLASS A WITH TWENTY PUPILS IN CLASS B ON BASIS OF THEIR INTELLIGENCE QUOTIENTS. PUPILS OF CLASS A ARE DESIGNATED AS A-20. PUPILS OF CLASS B ARE DESIGNATED AS B-20

A-20	IQ Scores	B-20	IQ Scores
F. J.	128	L. A.	126
A. L.	123	E. McL.	124
A. R.	120	D. B.	122
I. Y.	119	S. F.	119
B. E.	114	O. L.	119
H. A.	109	W. S.	118
A. A.	105	M. J.	107
E. B.	104	W. C.	105
D. L.	104	B. M.	104
H. V.	104	M. R.	103
N. R.	100	C. W.	101
M. R.	100	J. McC.	101
F. D.	100	L. T.	99
C. C.	100	J. L.	98
V. W.	96	B. E.	97
E. J.	96	L. B.	95
L. K.	96	S. K.	95
L. D.	92	M. S.	91
L. M.	88	W. A.	85
V. R.	84	I. B.	85
Median	102.85		102.5

being used in the scoring. The scores for rate were also derived. The median score for Class A in quality was 40.58, and for Class B, 42.72. The median score in rate for Class A was 66.87, and Class B attained 72.5. The quality and rate scores in A-20 were 40.6 and 67.5, respectively,

while the quality and rate scores in B-20 were 41.5 and 72.5, respectively. These results are indicated in Table III.

The pupils of Class B were commended for their work in writing, and the very able teacher of the class was encouraged in her effort to follow the course of study as outlined for the schools. Nothing more was said to the class. Frequent visits and talks with the teacher kept the work of this class (Class B) well under observation. This class followed strictly the course of study. A part of the motivation scheme suggested by the course of study for this grade was a test for quality and rate, which was given by the teacher and posted. No analysis or diagnosis of individual writing specimens was made, and nothing more than group directions were given.

In Class A the procedure differed. The teacher[1] of this group was

TABLE III

ATTAINMENTS FOR GROUPS INDICATED BY MEDIANS IN QUALITY AND RATE VALUE ON TESTS I AND II. CHANGES EFFECTED IN EACH GROUP ARE INDICATED

Values Scored	Quality				Rate			
Groups	Class A	Class B	A–20	B–20	Class A	Class B	A–20	B–20
No. of Pupils.....	33	28	20	20	33	28	20	20
Test I	40.58	42.72	40.6	41.5	66.87	72.5	67.5	72.5
Test II	47.08	45.35	47.5	45.0	58.5	59.28	65.0	58.8
Change*	6.5	2.63	6.9	3.5	−8.37	−13.22	−2.5	−13.7

*Changes were derived by subtracting results on Test I from results on Test II.

open-minded on the study and followed strictly all the suggestions and directions given. Each pupil was called to the teacher's desk and his quality score was compared with the standard for the grade, while his specimen was analyzed for faults and errors. He was told why his writing did not equal the standard. All of the errors and faults were definitely pointed out to the pupil. Faulty alignment, irregular spacing, unevenness in height of letters, inconsistency in slant, every faulty letter formation, such as "a" too open at the top, "t" too much like "e" and "l", etc., was pointed out as a probable cause for the scores attained in quality. For each error or fault, the pupil was given an exercise to correct it, directed in the use of the exercise, and made conscious of how it corrected the deficiency. The rate score was pointed out to the pupil and compared with the standard score for the grade. When the rate was in excess of the standard, the pupil was encouraged to improve his quality to match his speed. Each pupil whose rate was low was given

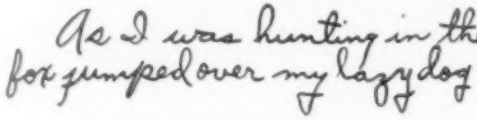
[1] The writer acknowledges his great indebtedness to Miss Corinne E. Lightbody for the instruction of this class by the suggested method. Appreciation is particularly due Mrs. Mabel Branham for her service in scoring the specimens.

suggestions for improving this value. The purpose of all this was to lead the pupil to see the difference between his writing and the standard, to recognize his faults, and to provide him with a technique for improving his product.

To indicate more clearly what was done for each individual pupil of Class A, a typical case is reported here. V. W., a girl, 9 years old, IQ

FIGURE I

SPECIMEN OF V. W.'S HANDWRITING OBTAINED ON TEST I
(Reproduced by tracing with a stylus)

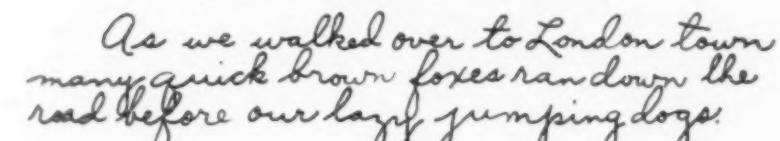


96, had a quality score of 42 and a rate score of 71 on Test I. Specimens of her work are seen in Figures I and II.

It was first pointed out that the slant was irregular, the tall letters varied in height, the extensions below the line were of different lengths, the small letters varied in size and were uneven. It was pointed out that the letters "g," "y," "p," "j," "br," "m," and "x" were formed poorly. In her copy book, she was shown that all letters slanted in the

FIGURE II

SPECIMEN OF V. W.'S HANDWRITING OBTAINED ON TEST II AFTER SEVEN WEEKS OF CORRECTIVE PRACTICE ON REVEALED FAULTS
(Reproduced by tracing with a stylus)



same direction, and she was cautioned to observe this in her practice. She was shown that "t," "d," and "p" were of a height different from the other tall letters; also, that the letters extending below the line were of the same length. The small letters were shown to have even height and their form indicated smoothness and uniformity of size.

For her practice period of work, she was given words and sentences that contained letters, which she had difficulty in forming. A group of tall letters containing "t," "d," "l," "k," "h," and "b" was given

as a practice exercise. The teacher demonstrated how each letter was formed, and directed the pupil in making the letters on a writing pad and often at the blackboard. She called attention to height and slant as well as the form. Another group of letters containing "g," "q," "z," "y," "p," and "f" was also given as a practice exercise, the letters being used in words and sentences, such as "quick," "buzzing," "Did you fish today?" etc. Capitals and small letters were drilled upon in words. In the case of the letters "m," "br," and "x," which seemed especially difficult for the pupil, exercises in making the letters in a group, such as "mmmmm," "brown fox," etc., were given at the practice periods. In each exercise, the teacher demonstrated the way to make improvement, giving attention to the position of hands, arms, and body.

The rate was pointed out as being above the standard for the grade, and the pupil was encouraged to keep the rate the same, if possible, but to work for quality to equal the rate.

For a period of seven weeks, the pupils in both groups worked during twenty-minute practice periods each day. Class B followed the course of study and Class A used a procedure that individualized instruction almost wholly.

On February 13, Test II was given to both groups. The test sentence was very much like the first: "As we walked over to London town many quick brown foxes ran down the road before our lazy jumping dogs." The specimens were collected and scored by the same method as Test I.

Table III indicates the results obtained in Test II for all group arrangements of the classes in quality and rate, and shows also the changes and improvements in these values. Class A attained a class median of 47.08 in quality and 58.5 in rate. Class B attained a median of 45.35 in quality and 59.28 in rate. In groups A-20 and B-20, it is seen that A-20 reached a median of 47.5 in quality and 65.0 in rate on Test II. Group B-20 attained a quality score of 45.0 and a score of 58.8 in rate.

Comparing scores on Test I with scores on Test II, improvement is indicated in all groups in quality value. In rate value, a reduction in number of letters per minute is indicated. In quality value, Class A made a gain of 6.5 points against a gain of 2.63 points for Class B. A-20 improved 6.9 points, while B-20 showed an improvement of 3.5. These results indicate that Classes A and A-20 made considerably more improvement. Changes in quality among individual pupils in Class A ranged from a reduction of 2 points to a gain of 21 points, while changes

in quality among individuals in Class B ranged from a reduction of 8 points to a gain of 15 points.

In considering the change in rate value, a greater reduction is seen in Class B than in Class A, as is indicated by –13.22 points in Class B and –8.37 points in Class A. In groups A-20 and B-20, a greater reduction is seen in B-20 than in A-20. It is seen that group A-20 maintained a score of 65, which is above the standard rate, 64, for the grade.

The gains in quality value in Classes A and A-20 over Classes B and B-20, considering all sources from which errors may have come, seem due to the consciousness of pupils of their faults and their use of a workable technique for correcting these faults. The change in rate value in Classes A and A-20 may be due to the fact that all pupils whose rate scores were above the standard were urged to give more attention to quality and maintain the rate as near the standard as possible. The evident slowing up in rate appears to have come as a result of the concentration upon quality. The reduction in speed in the B groups may be accounted for in a direction given to the class by the teacher. At one time she called the attention of the class to the very high rate score and told the pupils that the rate was too high for the quality attained. After that there was a tendency toward a slower rate.

In an attempt to account further for the improvement in the work, a number of pupils were interviewed. The following questions were asked each pupil:

1. What do you hope to do at writing time?
2. Do you have any writing faults? What are they?
3. What do you do to improve your faults?

The actual responses to the above questions by pupils of Class A are as follows:

H. V., boy, IQ 104.

(1) I try to improve my writing.

(2) Yes. I am working on my "I's," "a's," "d's," and "t's." I must make all of my letters of the same height, and the part below the line is to be as long as the others. I also write too slowly.

(3) To improve my speed, I had my mother keep time for me with a watch as I made letters at home sometimes. I look at my copy book to see if my letters are anything like them. I make my letters with a count.

F. J., girl, IQ 100.

(1) I want to improve my quality.

(2) Yes. I have trouble with "w," "I," "g," "y," "z," "A," "br," and letters with parts below the line.

(3) My teacher showed me how to make these letters. Now, I am trying to make them like the copy. I have all letters rest on the line and those that go below the line go down to an even point. I write them a little faster each time.

V. W., girl, IQ 96.

(1) I am trying to improve in making all of my letters.

(2) Yes. I must learn to form "g," "y," "z," "q," "br," "m," "thd" and "qu." My letters are not even. They are not on a line.

(3) Teacher showed me how to make them. I practice them in groups. All letters that go below the line I let go to the line below. All letters that are tall are carried to the top of the line. I make them faster each time.

Some responses to the above questions by pupils in Class B are as follows:

D. B., boy, IQ 122.

(1) Just time to write.

(2) I do not know.

(3) No special thing.

E. McL., girl, IQ 124.

(1) Write your best.

(2) "Z," "z," "P," "p." (This was a class exercise and all pupils were working on these letters.)

(3) I just practice on them.

I. B., girl, IQ 85.

(1) I want to do better.

(2) I think my "L" is bad.

(3) I always try out myself sometime.

The pupils whose responses are given above were selected at random in both groups. The pupils in Class A reflected a consciousness of the faults in their products and seemed possessed with some technique for improving their work. The responses of the pupils in Class B show a lack of individual consciousness of any definite expectation to be met by

them at the practice period. These responses may reflect to some extent a further cause for the marked gains made by Class A over Class B.

It appears that the results indicated in this study would justify the following conclusions:

1. Individual diagnosis and remedial instruction in handwriting is a practical classroom procedure in the upper grades of the elementary school.

2. Improvement is rapid when the pupil concentrates his efforts in practice upon the thing that needs improving.

3. Greater improvement is attained when pupils are made conscious of their faults and errors in handwriting and are provided with a workable technique for correcting and remedying the revealed faults.

THE TEACHING OF MODERN FOREIGN LANGUAGES: A NATIONAL SURVEY

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THE study of modern language teaching, which was concluded in 1928, extended over a period of nearly four years. It was the third of a series of curriculum studies in secondary education to be undertaken since the World War, and differed to some extent from its predecessors in materials and method. The survey of secondary mathematics, concluded in 1923,[1] was, in the main, a study of material already published and a formulation of opinion based on the training and experience of leaders in this field. The committee in charge of this survey did not have the funds to stage researches or experiments except to a very limited degree, and was obliged to avail itself of the results of those which had been carried on previously. The classical investigation went further. Equipped with larger funds and especially interested in the ultimate social objectives of the teaching of Latin, it started by positing a number of these and devoted itself to the administration of tests and to some extent to the organization of controlled classes, in order to determine the validity of such indirect aims of learning Latin as its effect on abilities in English, on the comprehension of classical quotations in English reading, on a knowledge of ancient history, etc. The rational minds that guided the survey started out with the premise that nothing would be claimed for Latin study unless it could be shown by irrefutable evidence that the claim was justified. It also collected, with the coöperation of the Bureau of Education in Washington, statistics covering the year 1922 for enrollment in Latin classes in public and private secondary schools.[2]

The experimental attitude of the Latin investigators served as a starting point for the modern language study, which was, however, much more adequately equipped with funds. While objectives also played a large part in the thinking of its Committee on Investigation, the members could not regard their task as fundamentally a search for aims which should justify the inclusion of French, German, or Spanish on the sec-

[1] *The Reorganization of Mathematics in Secondary Education:* A Report by the National Committee on Mathematical Requirements. Mathematical Association of America, 1923.

[2] *The Classical Investigation.* Princeton, New Jersey: Princeton University Press. Part I, 1924; Part III, 1925; Part II, not published.

ondary school program. Although certain social values, such as a knowledge of the history and culture of foreign peoples, were set forth among the indirect objectives of modern language teaching, and were made the subject of some experiment, nevertheless, a brief survey of the situation and a reasoning from previous experiments, including those made by the classical investigation, showed that the attainment of any objective varies directly with the amount of concentration which the teacher gives to it. They also showed that the measurement of so-called "transfer values" from the study of one subject to ability in another is such a refractory problem that those whose time and resources are limited would better concentrate on the things that would be certain to yield informing and helpful results. Furthermore, even from an apologetic standpoint, claims for the admission of a subject to the secondary curriculum on the ground that it helps in developing ability in another curriculum subject, certainly offer a very poor educational argument. Even if it could be shown that the study of French makes for a wider knowledge of English words, or a better understanding of French history, its right to a place on the secondary school program would not be justified, for it is certain that these abilities can be acquired more directly by a study of English words or of French history in English. The first question that any curriculum maker would ask would be, "Does it produce useful abilities in French?"

The discussion of the ultimate social objectives of instruction is one of the favorite themes of educational theorists. The teachers of the older curriculum subjects and the psychologists, however, are not so much interested in them, for they know that subjects like the languages, native and foreign, algebra, geometry, and national history, are on the secondary school program as a result of a survival of the fittest. Many generations have found them useful and necessary in the business of life and for the progress of mankind in understanding itself and nature. Much more important are questions as to *who* among secondary school pupils should study these subjects, *when* they should be begun, and *how long* they must be continued in order to provide a surrender value that will remain after formal study has ceased.

The committees in charge of the American and Canadian investigations were, therefore, interested first of all in the question as to whether French, German, and Spanish are now being taught in the secondary schools in such a way as to produce values which they alone can produce; namely, the ability to receive and express ideas in French, German,

and Spanish. This was the first question for which they sought an answer. The second was, "What hindrances lie in the way of achievement and what should be done to remove them?"

Naturally, these were large contracts, and they were fulfilled only in part. A measurement of the present situation included the collection of statistics for the whole country and the individual states, the construction and administration of tests, a personal survey which should sample representative secondary schools, an investigation of the training and experience of modern language teachers, of the laws and regulations covering their placement and certification, and an analysis of the opinions and experience of a large number of selected teachers, and of graduates of schools and colleges throughout the country. These last sources yielded material for the second aspect of the problem; namely, the present hindrances in the way of success and the means of improvement. Here, of course, the harvest was much smaller. Indeed, some of the problems which came to the front are very old and they cannot be solved within the near future, because it is difficult to strip them of variables. Such are the questions as to the age that, physiologically speaking, is the best for beginning modern language study, or the question as to the prognosis of ability, or disability, for such study. Others are questions of method, such as the shortest road to the ability to read, say German, and the grammatical minima and optima for that purpose, or the effect of disuse upon ability that has been acquired in the modern languages. All that could be done in such cases was to make a beginning, and this was accomplished through the coöperation of educational psychologists and modern language teachers in a number of universities. A real beginning was also made with the collection of curriculum material in the form of vocabulary and idiomatic locutions in the three languages of major use.

A committee of twenty, composed of administrators and present or former teachers of the modern languages, was appointed by the American Council on Education, which sponsored its labors. Funds were provided by the Carnegie Corporation of New York. It began its task in the last quarter of 1924 and held its final meeting in October, 1927, approving the general findings of its investigators and delegating the collection and publication of its reports to the Committee on Investigation which had carried on the active work of inquiry. The statistics gathered were for 1925 and 1926; the administration of the tests took place in 1926 and 1927; the researches and experiments in special topics fell in 1925 and

continued in some cases until 1928. The Canadian Committee, with an office at Toronto University, carried on a similar investigation throughout the Dominion, and coöperated with the American Committee in tests and experiments and in the collection of curriculum material. The reports, the last of which was published in 1930, total 17 volumes, and include more than 5000 pages, with many hundreds of charts and tables, making up altogether a formidable array of research material.[3] A summary of about 250 pages, with a general index to all volumes of the series, has been prepared and published this year.[4]

The general results of the investigation may be summed up under five heads: statistical; tests and scales; objectives, organization and methods; special studies on problems of modern language teaching, and curriculum material gathered on a frequency basis. A brief analysis will be sufficient to show the general nature of the findings in these fields.

The statistical survey, that assembled and analyzed figures for about 83 percent of the enrollment in all public and private secondary schools in the United States, was extraordinarily expensive and time-consuming, and its importance lies partly in the fact that it will probably never be repeated on this scale for any curriculum subject.[5] The analysis included all the states, all types of communities, and all schools, as well as placement in the grades. Statistics for 40 percent of all colleges in America were also gathered and analyzed. Of the secondary school pupils

[3] The reports and studies were issued as *Publications of the American and Canadian Committees on Modern Languages;* Volumes I, II, IV, V, and IX-XVII through the Macmillan Company, New York; Volumes III, VI-VIII by the University of Toronto Press. Copies of all except VI and VII, which cover specifically Canadian conditions, were distributed gratis (1000 to 1200 copies) to all member institutions of the American Council on Education and to many libraries and private individuals in this country and abroad. Copies of individual volumes may now be obtained from the publishers at a moderate cost. A large number of special studies supported, and in many cases organized and supervised, by the Committee on Investigation have appeared in modern language and educational journals or as individual monographs. Special attention should be called to the following among these: O'Shea, M. V. *The Reading of Modern Languages after Graduation.* U. S. Bureau of Education Bulletin, No. 16 (1927); Stuart, Hugh. *The Training of Modern Language Teachers for Secondary Schools in the United States.* New York: Bureau of Publications, Teachers College, Columbia University, 1927; McMurry, Mueller, and Alexander. *Modern Foreign Languages in France and Germany.* Studies of the International Institute of Teachers College. New York: 1930.

[4] A Summary of Modern Language Reports Issued by the American and Canadian Committees, with a General Index. New York: The Macmillan Company, 1931.

[5] "Enrollment in Modern Foreign Languages in the Schools and Colleges of the United States." *Publications of the American and Canadian Committees on Modern Languages,* IV.

in this country, about 25 percent are students of the modern foreign languages, a somewhat smaller number than those who study Latin. Modern language students are, however, found in preponderating numbers in the Northeast and the Southwest; south of the Potomac and the Ohio and in the vast area between the Alleghanies and the boundaries of the old Spanish territory, the modern languages play a very minor rôle, while Latin occupies an important place on the secondary program. More striking are the findings that concern the brevity of the modern language course. More than four-fifths of French pupils abandon study of the language after the second year. Only 3 percent are to be found in the fourth year. In Spanish and German the course is even shorter. While Latin has a more or less fixed year of beginning, the ninth grade, the modern languages may be begun at any time, and the pupils are almost equally distributed through the tenth, eleventh, and twelfth grades. In the private schools, the modern languages are almost twice as popular as in the public schools, and they enjoy, also, a much greater popularity in the colleges throughout the country as a whole.

The administration of tests also consumed a large part of the time and money of the committee. Some beginnings had been made, notably by Wood of Columbia, who also coöperated with the committee, and by the Department of Education at the University of Iowa. The Committee on Investigation felt it necessary to construct and standardize tests in vocabulary, grammar, and reading by other techniques than those which had previously been employed, and to construct scales for measuring free composition in French, German, and Spanish. It made all of these commercially available for modern language teachers for the future.[6] Wide administrations of tests took place in New York State in the junior high schools and at the Regents' examinations, and in 250 schools and colleges from the Atlantic to the Pacific, as well as in Canada. Tests were also administered to about 8000 French pupils in the secondary schools of England. The committee's reports include, therefore, a wide showing for the achievement of pupils in the three languages throughout a great part of the English-speaking world.[7] The general

[6] They are issued by the World Book Company, Yonkers-on-Hudson, New York, as American Council Alpha and Beta Tests in French, German, and Spanish, with manuals of directions, including norms, composition scales, etc., and keys and class record sheets.

[7] Wood, B. D. "New York Experiments with New Type Tests in Modern Languages." *Publications of the American and Canadian Committees on Modern Languages*, I; Henmon, V. A. C. "Achievement Tests in Modern Foreign Languages." *Publications of the American and Canadian Committees on Modern Languages*, V.

results show an appalling misplacement. In the United States as a whole, about 60 percent of the students are, in general, misplaced by a semester or more as measured by the school-year method of classification. The standing of the pupils tested in the various language abilities is measured by the quality of the material on which the median performance breaks down. Judged by this standard, it is clear that at least one-half of the thousands who were tested failed by the end of the second year to attain any useful command of the language.

Experiments with prognosis of modern language ability were carried on by eight individuals and teams. The results yielded a great amount of data respecting the prognostic qualities of the intelligence tests, tests in English, in artificial languages, etc., and of combinations of such tests for modern language prognosis.[8] As a net result, tests were found which showed an appreciable, even though slight, advance over the best prognosis by intelligence tests. It cannot be said that the investigation has shown the possibility of constructing prognosis tests for modern language study of sufficient reliability to be used for excluding individual pupils, or that it has cleared up the knotty question as to whether there is a specific modern language ability or bundle of abilities. Some tests have, however, been evolved that justify the hope that further experiments in this direction will bring results sufficiently better than pure guessing to make them reliable instruments for placing students in special sections, and perhaps even for excluding a certain class of defective students.

The Committee on Investigation drew up at the beginning of its labors a list of 123 problems relating to organization, curriculum material, testing, etc., in modern languages, and these were farmed out to a number of institutions where departments of education or individual scholars were found to take an interest in their investigation. A large number of these fell by the wayside, of course, but in all, 56 scholars and research students at 28 institutions brought through studies that contribute to a wider knowledge of modern language teaching and to specific problems relating to it. One of the most important of these was Buswell's experiment with eye movements when learning to read the foreign languages.[9] This showed, among other things, the gain through

[8] Henmon, V. A. C., and others. "Prognosis Tests in the Modern Foreign Languages." *Publications of the American and Canadian Committees on Modern Languages*, XIV.

[9] Buswell, G. T. "A Laboratory Study of the Reading of Modern Foreign Languages." *Publications of the American and Canadian Committees on Modern Languages*, II.

direct methods of instruction in bringing the eye behavior of the learner into line with that shown when reading the vernacular, that is, with a mature procedure in reading. Others related to the finding of cultural material in groups of foreign language texts commonly used in school and college, to the effect on achievement in modern languages of sectioning students according to ability, to the influence of modern language study on abilities in English (two very careful experiments by Werner and Woody with opposite results!), to the effect that experience with a first modern language has on achievement in a second, and to the reliability of composition scales for rating free composition.[10]

A highly important undertaking, carried out by the Canadian Committee, was the preparation of an exhaustive bibliography. This was the joint work of a modern language expert and a psychologist, and includes discussions of a wide range of psychological contributions to language study.[11]

A considerable number of studies bear necessarily on the question of objectives and organization, as well as on methods of instruction. Indeed, these topics are concerned with *all* the results of the inquiry so far as they relate to present achievement in modern language teaching, its defects and the possibilities for improvement. What do our pupils now accomplish? It has already been pointed out that present attainment, measured by objective tests, by at least one-half of the secondary school pupils at the end of a two-year course does not show the ability to read or write the language or an ability in grammar which can be interpreted as worthwhile. Of about 800 selected teachers who testified from their own experience, one-third did not feel that the ability to read is attained at the end of two years of study. An even greater proportion were of the opinion that neither in speech nor writing could their pupils at the end of this period use the language with success. As regards a development of these abilities to the point of success at the end of three years, opinion was divided, and the results of the testing were equally inconclusive. In a report prepared by Professor Coleman on the topics under discussion,[12] the committee put the reading objective first on the list

[10] Thirteen of these papers, including a history of modern language teaching in this country, appear in "Studies in Modern Language Teaching." *Publications of the American and Canadian Committees on Modern Languages*, XVII.

[11] Buchanan and MacPhee. "An Annotated Bibliography of Modern Language Methodology." *Publications of the American and Canadian Committees on Modern Languages*, VIII.

[12] "The Teaching of Modern Foreign Languages." *Publications of the American and Canadian Committees on Modern Languages*, XII.

of those in which attainment is to be sought. Here it followed practically every authority and group that has expressed itself on the subject, that the ability to read French, German, or Spanish with ease after graduation is the most important asset which the American boy or girl can derive from modern language study is so obvious as to need no defense. The committee registered the opinion, not without disagreement among its members, that too many things are now being attempted in the two-year course, and recommended for that course an experimentation with a largely increased amount of reading material adapted to the age and social needs of the students, and the subordination of grammatical and oral training to the attainment of the reading objective.

The extraordinary overlapping in modern language classes, which is apparently as bad in Canada and England as in this country, is largely responsible for poor achievement and lack of standards. The situation in many schools, at present, is no better than a chaos of mal-classification, and one result is a profound discouragement on the part of teachers and pupils. The obvious way to rectify this is by a frequent use of objective tests and a reclassification based on the results. Both of these steps depend on the coöperation of school boards, principals, and teachers. Whether the two-year course can be extended for any considerable number of pupils in the public schools of this country is highly doubtful. The possibility of attaining the reading objective referred to above is, of course, dependent on a much more careful classification of students and a much more ruthless elimination of incompetents than is now the case. Under such circumstances, it is quite easy to understand that any discussion of method must play a secondary rôle until better conditions are created. The committee did not succeed in bringing any direct experimental results to bear on the problem of method, which plays so large a part in the minds of modern language teachers. These teachers often nourish a pathetic belief that there exists in some favorite method or other the only saving grace for accomplishing the now impossible task of putting boys and girls into the possession of several abilities in the foreign languages; impossible because a much longer time and essentially different conditions would be necessary to attain this end. At present it is only in those schools where active and intelligent departmental control exists that any uniform development of the various capacities, to read, to understand the spoken language, to control grammatical forms in speech and writing, now takes place.

The difficulty, of course, lies to a great extent with the teacher himself. The committee's survey produced evidence of defects in training and experience drawn from the records of 10,000 teachers of the modern languages in secondary schools.[13] One-third of this teaching force has an experience of not more than three years, only 30 percent of all have ever visited the foreign country whose language and culture they seek to teach. The median amount of training of this great host is four and one-half years in the foreign language, a shorter course than that of an undergraduate major in the subject in most Class A colleges. The greater part of the training of these teachers, and *all* the training of a considerable percentage, is received in the undergraduate college. Beginning with this type of institution, the committee set out to define courses and requirements which should make the "major" in college a somewhat more adequate preparation for the teacher's career. Some of the defects in training and experience are due to the indifference of legislators and school superintendents, for the "blanket certificate" is the absolute negation of special training. Much of the difficulty is due to financial handicaps. The weakness of the modern language teaching corps is perhaps no worse than that found among other curriculum subject teachers, but the defects of the modern language teacher are more apparent, because his performance and product can be checked more easily.

The provision of vocabulary and grammatical material for the curriculum on an objective basis was a matter to which the committee gave a great deal of attention. For the selection of this material it adopted the principle with which Thorndike and others had experimented in English and Henmon in French, the principle of frequency of usage. Word lists and idiom lists in all three languages were prepared with the coöperation of a large number of teachers,[14] the items listed being drawn from a wide range of sources and a wealth of material, which give the words and locutions and their sequential arrangement a reliability for textbook making and testing that has heretofore been unknown. Certainly these lists, which cost a great amount of money and labor, pro-

[13] Purin, C. M. "The Training of Teachers of the Modern Languages." *Publications of the American and Canadian Committees on Modern Languages,* XIII.

[14] Vander Beke, G. E. "A French Word List," XVI; Cheydleur, F. D. "A French Idiom List," XV; Morgan, B. I. "A German Frequency Word Book." IX; Hauch, E. F. "A German Idiom List," IX; Buchanan, M. A. "A Graded Spanish Word Book," III; Keniston, H. "A Spanish Idiom List," XI.

vide objective bases for finding words and idioms of progressive difficulty and for measuring the difficulty of texts and grammars that cannot be disregarded by teachers or publishers in the future. Unfortunately, the time was too short to carry through frequency counts of syntactical phenomena, but there is hope that these can be undertaken under other auspices.

The Canadian survey showed, in one respect at least, a somewhat better picture than that furnished by secondary schools of the United States.[15] The course north of the international boundary is rarely less than three years, and in the case of French, usually four years. The Canadians have, however, their own difficulties, and these stand directly in the path of the attainment of useful objectives, so that on the objective tests their pupils showed no higher levels of achievement and the schools revealed just as chaotic a condition of misclassification and of standards as in this country. In the Dominion, whose people are essentially conservative, the University matriculation examinations, with their rigid prescriptions for reading and their non-elastic forms of testing, lay a deadening hand on the development of real achievement in the languages and kill the initiative of the teachers for fruitful experiment. The Canadian committee's bulky volumes bring historical and other evidence of this conventionalism and ritualism, which is really an inheritance from the methodology of the classical languages and rests mainly on a belief in the indirect or transfer values of language study rather than in the necessity for making these subjects of direct value to the student when study has ceased. Strikingly enough, in Quebec, where French is the language of major use and English-speaking students undergo constant and intensive drill in spoken French, the committee expresses its doubt as to whether the time and effort thus expended is rewarded by the results attained.

Any investigation of a curriculum subject at the secondary level becomes the target for a great deal of criticism, especially since such investigations have usually been conducted by friends of the subject. It is therefore very hard for observers to get rid of the feeling that the investigators are working *pro domo*. At the beginning, the American and Canadian Committees on Modern Languages did something to disarm this

[15] Cf. "Modern Language Instruction in Canada." *Publications of the American and Canadian Committees on Modern Languages*, VI and VII.

feeling through the appointment of an expert in educational psychology, Professor V. A. C. Henmon of the University of Wisconsin, as a member of the Committee on Investigation. They also associated, wherever possible, psychologists with modern language experts in the various phases of the inquiry. Striking examples of successful coöperation of this kind are the Trabue French Composition Scale,[16] prepared by an educational psychologist with the coöperation of 125 French teachers distributed throughout the United States and Canada, and the Van Wagenen-Patterson German Reading Scales,[17] which were constructed as a coöperative enterprise. That there were many defects in the organization of the survey is now apparent. Among these were the failure to make a study of the effect of state and local modern language supervision on achievement, and the failure to organize controlled classes for inquiry into questions of method. In an undertaking of this kind, there is a limit to the amount of "organizatory" energy and supervision by any group and in an *ad hoc* organization this limit is soon reached. The study turned out to be largely a research and experimental undertaking and must be judged by standards applying to such enterprises. Like all research, it planted many seeds which did not come up. Its most important findings were to lay bare in all of its starkness the situation as regards discontinuance of study and misclassification and lack of standards. Its greatest concrete contributions were the tests and scales and the frequency studies of curriculum material, with the data for further development of these tools and instruments. Perhaps its most important result was the demonstration that the chief problems in modern languages, such as the proper age of beginning, the minimum period of worthwhile study, the effects of disuse, the causes of error, etc., cannot be solved except through a series of experiments carefully safeguarded and adequately supported, which shall last over a period of years. This statement is true of secondary education in general, for in this country, while some really experimental work has been done in the field of elementary education, secondary education is still in the zone of traditional usage, and the subjective opinions which one hears proclaimed with much assurance far and wide are not supported by experimental data. It is to be hoped that means will be found very speedily for a systematic attack upon

[16] Included in the Manual of Directions for the American Council Alpha Tests in French.

[17] Issued by the Public School Publishing Company, Bloomington, Illinois.

some of the questions relating to the secondary school through a series of experiments which shall extend over a sufficient number of years to give their results a scientific standing.[18]

[18] Acting on a request of the general committee in charge of the modern language investigation, the American Council on Education appointed a Committee on Modern Language Teaching to continue the work of research and experiment begun during the inquiry and to bring the results to the attention of modern language teachers seeking funds to organize further experiments.

THE ECONOMIC STATUS OF TEACHERS COLLEGE AND UNIVERSITY FACULTIES

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THE question of financial income and expenditure is one that is always of vital concern to any economic group and is, to a greater extent than ever, engaging the attention of thinking men and women in every line of endeavor. That the educational group is no exception, is evidenced by the increasing number of reported investigations[1, 2] on this problem.

A recent survey of this type is reported by Dr. Peixotto, Professor of Social Economics, at the University of California.[3] Miss Peixotto reports a detailed investigation of 96 faculty families in the University of California at Berkeley.

The present report, which is a comparison of Miss Peixotto's study and data obtained from seven state teachers colleges located in six states, is an attempt to show how the incomes and expenditures of the teachers-college group compare with those of the University of California faculty members. The more important details of the subject have been selected for the comparison.

After a careful study of the material presented by Miss Peixotto,[4] a comprehensive questionnaire was sent to eighteen teachers colleges. Returns were received from twenty families of seven state teachers colleges located in six states. The facts thus obtained were then compared to Miss Peixotto's study of the social and economic status of the faculty of the University of California.

I. SOCIAL DATA

Seventy-three members were included in the twenty families reporting. (Table I.) The sex of the twenty-three children and of ten of the adults was not determined.

[1] Henderson, Y., and Davie, M. R. *Incomes and Living Costs of a University Faculty.* New Haven: Yale University Press, 1928.

[2] Felmley, D. *Economic and Professional Status of the American Teachers College Teachers* (Proceedings of the National Education Association, LXV, 1927). pp. 162-167.

[3] Peixotto, Jessica B. *Getting and Spending at the Professional Standard of Living.* New York: The Macmillan Company, 1927.

[4] Peixotto, Jessica B. *op. cit.*

The ages of a larger number of faculty members in each group, (Table II) were over 35 and less than 50 years. On the average, teachers-college instructors are older than those in the University of California. Generally the wives of the faculty members in the university group are younger than their husbands, while the ages of teachers-college faculty members correlate quite closely with those of their helpmates.

The size of the families of the two groups (Table III) is very similar. Twenty-five percent of the teachers-college families have no children; 25 percent have one child, and 30 percent have two. Twenty percent have larger families. This is very similar to the size of families in the

TABLE I

THE TOTAL NUMBER OF PERSONS IN ALL HOUSEHOLD GROUPS BY SEX AND MATURITY IN 96 UNIVERSITY OF CALIFORNIA FAMILIES,[a] AND 20 FAMILIES IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES,[b] 1929

Sex[c]	Adults		Children under 16		Total	
	University of California	Teachers colleges	University of California	Teachers colleges	University of California	Teachers colleges
Male	109	20	68		177	20
Female	157	20	53		210	20
Not indicated		10		23		33
Total	266	50	121	23	387	73

[a] Peixotto, Jessica B. *Getting and Spending at the Professional Standard of Living.* (New York: The Macmillan Company, 1927), Table V, p. 60.

[b] A total of forty check-lists were returned: State Teachers College, St. Cloud, Minnesota, 5; State Normal College, Dillon, Montana, 11; Western State College, Gunnison, Colorado, 8; State Teachers College, San Diego, California, 2; State Normal School, Madison, South Dakota, 4; Territorial Normal and Training School, Honolulu, Hawaii, 5; Colorado State Teachers College, Greeley, Colorado, 5. Only twenty of these were from heads of families.

[c] The Colorado State Teachers College questionnaire did not include sex information other than for the instructor and his helpmate.

TABLE II

THE LIFE AGE OF FACULTY MEMBERS AND HELPMATES IN THE UNIVERSITY OF CALIFORNIA[a] AND IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Life age[b]	Faculty members				Helpmates			
	University of California		Teachers colleges		University of California		Teachers colleges	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Less than 35 years	23	24.0	4	20.0	41	42.7	4	20.0
35 to 50 years	60	62.5	9	45.0	44	45.8	9	45.0
50 years and over	13	13.5	7	35.0	11	11.5	5	25.0
Age not given							2	10.0
Total	96	100.0	20	100.0	96	100.0	20	100.0

[a] Peixotto, Jessica B. *op. cit.* Table VI.

[b] Three wives in Colorado State Teachers College were two years older than their husbands, and one was six years older.

TABLE III

THE NUMBER OF CHILDREN IN THE ACADEMIC FAMILIES STUDIED IN THE UNIVERSITY OF CALIFORNIA[a] AND IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Number	Number of families		Percent	
	University of California	Teachers colleges	University of California	Teachers colleges
None	27	5	28.1	25.0
One	24	5	25.0	25.0
Two	25	6	26.0	30.0
Three	11	1	11.5	5.0
Four	7	2	7.3	10.0
Five	2	1	2.1	5.0
Total	96	20	100.0	100.0

[a] Peixotto, Jessica B. *op. cit.* Table VIII, p. 63.

University of California and also to the size of family in the ordinary city home.[5]

Less than 10 percent of the instructors in either group are foreign born. (Table IV.) Usually the foreign born instructor has a foreign born wife. A very small percentage of children are foreign born. The larger percentage of faculty members, approximately 50 percent, were born in the section of the country in which they are now teaching. In these groups, the larger percentages were born in the central and western states.

TABLE IV

THE NUMBER AND PERCENT OF NATIVES AND OF FOREIGN BORN AMONG ALL MEMBERS OF 96 FAMILIES[a] IN THE UNIVERSITY OF CALIFORNIA[b] AND 20 FAMILIES IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Birth	Married faculty members		Helpmates		Children[c]		All persons	
	University of California	Teachers colleges	University of California	Teachers colleges	University of California	Teachers colleges	University of California	Teachers colleges
1. United States								
a. Number	86	16	86	19	142	31	314	66
b. Percent	89.6	80.0	89.6	95.0	97.9	93.9	93.2	90.4
2. Foreign								
a. Number	10	4	10	1	3	2	23	7
b. Percent	10.4	20.0	10.4	5.0	2.1	6.1	6.8	9.6
Total								
Number	96	20	96	20	145	33	337	73
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a] The University of California data exclude 50 persons other than members of the immediate family. All members are included in the Colorado State Teachers College study.
[b] Peixotto, Jessica B. *op. cit.* Table X, p. 66.
[c] This includes all living children regardless of age.

[5] Davis, W. "The Earth's Population Limit," *Current History*, XXVI (August, 1927), pp. 773-777.

II. SOURCES OF INCOME

The median amount of regular salary, (Table V), for teachers-college faculty members is $3200; for the university, $3125. The quartile deviations show a much smaller range of salaries for teachers college instructors. When the total income is considered, the median is higher and the range smaller for the university faculty. The university faculty evidently increases their income by means other than instruction to a greater extent than do teachers-college faculty members. One instructor of each twelve in the university group receives an income of over $10,000. Only one of twenty in the teachers-college group receives $9,000.

TABLE V

THE RELATIVE AMOUNT OF REGULAR SALARY AND OF TOTAL INCOME RECEIVED BY 96 FAMILIES OF THE UNIVERSITY OF CALIFORNIA[a] AND 20 FAMILIES IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Amount	Number of families			
	Regular salary		Total income	
	University of California	Teachers colleges	University of California	Teachers colleges
$10,000 and over			8	
9,000 – 9,999			2	1
8,000 – 8,999	1		1	0
7,000 – 7,999	0		6	1
6,000 – 6,999	3	2	4	4
5,000 – 5,999	1	0	18	2
4,000 – 4,999	23	2	28	4
3,000 – 3,999	28	11	21	7
2,000 – 2,999	35	5	7	1
Less than 2,000	5[b]		1	
Total	96	20	96[c]	20
Q_3	$4,173.90	$3,700.00	$4,678.55	$5,800.00
Median	3,125.00	3,200.00	3,787.50	3,600.00
Q_1	2,542.85	2,900.00	3,761.90	3,400.00
Q	815.53	400.00	458.35	1,200.00

[a] Peixotto, Jessica B. *op. cit.* Table XIII, p. 76.

[b] The University of California study includes two men with reported salaries of $2,000 but who were employed for a half year only. They are included in this table on a full yearly basis.

[c] This includes two families in the University of California study who failed to report amount of income in addition to their regular salary.

Additional instruction, research, and administrative work, (Table VI), contribute to the income of the teachers-college instructor. The first of these is the most important. University professors add to their income by six means, of which additional instruction and research are the most important.

III. EXPENDITURES

Miscellaneous items, (Table VII), including savings, insurance, investments, etc., also car, recreation, and other things constituted nearly one-half of the total expenditures for both types of families.

TABLE VI

SOURCE OF EARNINGS BY FACULTY MEMBERS AND MEDIAN AMOUNT FROM EACH SOURCE IN THE UNIVERSITY OF CALIFORNIA[a] AND IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Source	Number reporting		Median	
	University of California	Teachers colleges	University of California	Teachers colleges
1. All occupations	96	20	$3,787.50	$3,600.00
2. Regular instruction	96	20	3,125.00	3,200.00
3. All additional occupations	71	15	500.00	550.00
4. Additional instruction	44	14	400.00	540.00
5. Research	33	3	200.00	250.00
6. Public service	15	0	75.00	0.00
7. Expert advice or business	8	0	1,164.25	0.00
8. Administrative	5	1	750.00	40.00
9. Other	8		160.94	

[a] Peixotto, Jessica B. *op. cit.* Table XVII, p. 98

TABLE VII

PERCENTAGE DISTRIBUTION OF THE EXPENDITURES OF AN ANNUAL AMOUNT OF $529,130.82 BY 96 FACULTY FAMILIES OF THE UNIVERSITY OF CALIFORNIA[a] AND $82,187.00 BY 20 FACULTY FAMILIES OF SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Item	University of California	Teachers colleges
1. Food	(16.0)	(13.0)
2. Clothing[b]	(8.8)	(9.6)
a. Husband	3.1	
b. Wife	3.4	
c. Children	2.3	
3. Shelter	(15.8)	(19.4)
4. House operation	(13.8)	(12.0)
a. Furniture and furnishings	4.2	2.2
b. Service	4.2	1.8
c. Heat and fuel	1.9	2.6
d. Other[c]	0.3	2.4
e. Light	0.7	0.8
f. Telephone, telegraph	0.7	0.7
g. House laundry and supplies	0.7	0.3
h. Personal cleaning supplies	0.5	0.4
i. Stationery and postage	0.2	0.3
j. House cleaning supplies	0.2	0.2
k. Ice	0.1	0.2
l. Garbage removal	0.1	0.1
5. Miscellaneous	(45.6)	(46.0)
a. Investment	13.1	14.3
b. Automobile	7.0	7.9
c. Education	3.0	9.5
d. Recreation	5.2	4.2
e. Health	5.7	3.7
f. Professional	3.0	1.0
g. Gifts	2.3	1.5
h. Church	0.6	2.0
i. Incidentals	1.6	0.6
j. Associations	1.4	0.6
k. Dependents	1.6	0.0
l. Charity	0.7	0.6
m. Tobacco	0.4	0.1
Total	100.0	100.0

[a] Peixotto, Jessica B. *op. cit.* Table XXVII, p. 123.

[b] The teachers college questionnaire did not determine the amount spent for each member of the family.

[c] One family reported simply the total amount of cost of house operation. This was figured as "other" in the teachers-college distribution.

Shelter took nearly the same median total expenditure for each group ($684 and $660), but a higher percentage of the total for teachers-college families. Rent or owner's expense was similar in amount in the two situations.

The university families spent the most ($808 and $538) and also the greater percentage of total expenditure for food, the reason being that living expenses are probably higher in California. Or possibly, the larger income of the university group results in the maintenance of a better table.

The median expenditure for clothing is very similar for the two groups ($440 and $408). It is approximately 2 percent greater for the teachers-college faculties.

House operation is more expensive at the University of California. The median ($568 and $400) and percentage amounts are both larger. This is probably to be expected, because of the higher average income of the university professor.

An examination of the items of expenditure as given in Table VII shows that expenses for non-essentials are very small. On the whole, the expenditure for the different items is quite similar in the two groups.

Food expenditure in relation to family size is shown in Table VIII. As noted in a previous paragraph, this is larger for university families. The rank difference correlation between expenditure for food and size of family is .88 ± .06 for the university families and .68 ± .16 for teachers-college faculty families.

TABLE VIII

MEDIAN PERCENTAGE OF EXPENDITURE FOR FOOD IN RELATION TO SIZE OF FAMILY AND TOTAL EXPENDITURE IN THE UNIVERSITY OF CALIFORNIA[a] AND SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Size of family	Institution	Total number of families	Median percentage
8	University of California	1	22.50
	Teachers colleges	0	0.00
7	University of California	4	18.33
	Teachers colleges	1	22.50
6	University of California	9	19.17
	Teachers colleges	2	17.50
5	University of California	18	20.00
	Teachers colleges	1	12.50
4	University of California	21	16.88
	Teachers colleges	4	12.50
3	University of California	22	16.43
	Teachers colleges	6	20.00
2	University of California	21	15.13
	Teachers colleges	5	12.50
Total	University of California	96	17.24
	Teachers colleges	19[b]	14.06

[a] Peixotto, Jessica B. *op. cit.* Table XXXIV, p. 154.
[b] One teachers-college family failed to report expenditure for food.

Seventy-four percent of teachers-college faculty families spent at least $300 annually for clothing. (Table IX.) This was the largest amount spent in the majority of cases. It can be seen that these people dress conservatively.

Approximately one-seventh of the university faculty families and 10 percent of teachers-college families use one-fourth of their total expendi-

TABLE IX

NUMBER AND PERCENT OF 19 FACULTY FAMILIES OF SEVEN STATE TEACHERS COLLEGES IN SIX STATES SPENDING A GIVEN AMOUNT FOR CLOTHING, 1929

Amount	Number	Percent
$300 and over	14	73.7
250 – 299	3	15.8
200 – 249	2	10.5
Total	19[a]	100.0

[a] One family failed to report any amount spent for clothing.

TABLE X

THE PROPORTION OF TOTAL EXPENDITURE DEVOTED TO HOUSING BY 96 FAMILIES IN THE UNIVERSITY OF CALIFORNIA[a] AND 20 FAMILIES IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Percentage	Number of families: University of California	Number of families: Teachers colleges
25.0 and over	5	1
30.0 – 34.9	4	0
25.0 – 29.9	6	1
20.0 – 24.9	14	4
15.0 – 19.9	26	9
10.0 – 14.9	20	3
5.0 – 9.9	14	2
Less than 5.0	7	
Total	96	20
Median percent	16.3	17.8

[a] Peixotto, Jessica B. *op. cit.* Table XXXVII, p. 166.

TABLE XI

MEDIAN AMOUNT AND PERCENTAGE SPENT FOR SHELTER FOR A GIVEN AMOUNT OF TOTAL EXPENDITURE FOR 96 FACULTY FAMILIES OF THE UNIVERSITY OF CALIFORNIA[a] AND 20 FACULTY FAMILIES OF SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Total expenditure	Amount: University of California	Amount: Teachers colleges	Percent: University of California	Percent: Teachers colleges
$10,000 and over	$773.30		6.4	
9,000 – 9,999	246.56		2.7	
8,000 – 8,999	643.68		7.9	
7,000 – 7,999	838.00	$1,402.50	10.7	18.0
6,000 – 6,999	1,492.03	665.00	23.3	9.8
5,000 – 5,999	954.80	2,400.00	18.7	19.2
4,000 – 4,999	669.50	1,025.00	15.3	22.0
3,000 – 3,999	633.47	625.00	19.0	18.4
2,000 – 2,999	426.00	525.00	16.8	18.0
Median of: Total	$684.50	$660.00	15.3	18.0

[a] Peixotto, Jessica B. *op. cit.* Table XXXVIII, p. 166.

ture for shelter. (Table X.) The latter group cluster more closely about the median percentage of expenditure, (Table XI), than do the university families. The university families spend slightly more for house furnishings, (Table XII), than do teachers-college families, but neither group is extravagant.

TABLE XII

NUMBER AND PERCENTAGE OF FAMILIES HAVING A STATED INCOME WHO REPORTED EXPENDITURES FOR FURNISHINGS AMONG 96 FACULTY FAMILIES OF THE UNIVERSITY OF CALIFORNIA[a] AND 20 FACULTY FAMILIES OF SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Total expenditure	Percent reporting expenditure less than $200		Percent reporting expenditure more than $200		Number reporting expenditure	
	University of California	Teachers colleges	University of California	Teachers colleges	University of California	Teachers colleges
$10,000 and over	33.3		66.7		6	
9,000 – 9,999	20.0		80.0		5	
8,000 – 8,999	25.0		75.0		4	
7,000 – 7,999	66.7		33.3	100.0	3	1
6,000 – 6,999	50.0	100.0	50.0	0.0	8	1
5,000 – 5,999	82.3	50.0	17.7	50.0	17	2
4,000 – 4,999	90.0	0.0	10.0	100.0	20	1
3,000 – 3,999	86.4	100.0	13.6		22	8
2,000 – 2,999	87.5	100.0	12.5		8	1
Total	73.1	78.6	26.9	21.4	93	14

[a] Peixotto, Jessica B. *op. cit.* Table XLVI, p. 186.

IV. HOUSING CONDITIONS

Homes are owned by 64 percent of the university group and 53 percent of the teachers-college group. (Table XIII.) Ownership, apparently, is related more closely to individual preference than to income or expenditure. The size of the home, (Table XIV), appears to be adequate, in most cases, to the size of family. The size of the home, (Table XV), tends to grow larger with the increase in income.

V. THE STANDARD OF LIVING

A comparison of standards of living, as determined in other studies, is made with those reported for this investigation in Table XVI. Data are given under six main headings.

The percentage of expenditure for food is lowest for the teachers-college group and third from the lowest for the university. The academic faculties rank lowest in amount spent for clothing. Shelter and miscellaneous items, except investment and savings, claim a higher percentage for these two groups. Investment and savings are about equal for six of the nine groups.

TABLE XIII

PROPORTION OF OWNERS AND TENANTS FOR A SPECIFIED AMOUNT OF TOTAL EXPENDITURE FOR 96 FACULTY FAMILIES OF THE UNIVERSITY OF CALIFORNIA[a] AND NINETEEN FACULTY FAMILIES[b] IN SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Total expenditure	Owners (Percent)		Tenants (Percent)	
	University of California	Teachers colleges	University of California	Teachers colleges
$10,000 and over	75.0		25.0	
9,000 – 9,999	80.0		20.0	
8,000 – 8,999	100.0		0.0	
7,000 – 7,999	100.0	100.0	0.0	
6,000 – 6,999	87.5	0.0	12.5	100.0
5,000 – 5,999	82.4	0.0	17.6	100.0
4,000 – 4,999	66.7	100.0	33.3	0.0
3,000 – 3,999	40.9	55.6	59.1	44.4
2,000 – 2,999		33.3	100.0	66.7
Total	63.5	52.6	36.5	47.4

[a] Peixotto, Jessica B. *op. cit.* Table XL, p. 167.
[b] One teachers college family was excluded as the questionnnaire did not state whether the family owned or rented the home.

TABLE XIV

MEDIAN NUMBER OF ROOMS OCCUPIED BY HOUSEHOLDS OF A SPECIFIED SIZE IN THE UNIVERSITY OF CALIFORNIA[a] AND SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Size of household	Number of families[b]		Number of rooms	
	University of California	Teachers colleges	University of California	Teachers colleges
8	1		8.0	
7	5	1	12.0	4.0
6	10	2	9.0	11.0
5	16	1	9.0	7.0
4	24	4	8.0	7.0
3	19	5	6.0	7.5
2	21	4	5.0	4.0
Total	96	17	8.0	7.4

[a] Peixotto, Jessica B. *op. cit.* Table XLII, p. 168.
[b] Three teachers college families were excluded as they failed to indicate the number of rooms.

TABLE XV

MEDIAN NUMBER OF ROOMS OCCUPIED BY HOUSEHOLDS OF A SPECIFIED INCOME IN THE UNIVERSITY OF CALIFORNIA[a] AND SEVEN STATE TEACHERS COLLEGES IN SIX STATES, 1929

Size of income	Number of families[b]		Number of rooms	
	University of California	Teachers colleges	University of California	Teachers colleges
$10,000 and over	8		9.0	
9,000 – 9,999	2		12.5	
8,000 – 8,999	1		11.0	
7,000 – 7,999	6		8.5	
6,000 – 6,999	4	4	10.0	7.5
5,000 – 5,999	18	2	9.0	11.0
4,000 – 4,999	28	4	7.5	8.0
3,000 – 3,999	21	7	5.5	5.3
2,000 – 2,999	7		4.0	
Less than 2,000	1		6.0	
Total	96	17	8.0	7.4

[a] Peixotto, Jessica. *op. cit.* Table XLIII, p. 169.
[b] Three teachers college families were excluded, as they failed to indicate the number of rooms.

TABLE XVI

COMPARATIVE PERCENTAGE DISTRIBUTION OF EXPENDITURE FOR THE MAIN ITEMS OF BUDGET FOR A FAMILY OF FOUR WITH AN INCOME EQUIVALENT TO $4800 PER YEAR

Source	Food	Clothing	Shelter	House operation	Miscellaneous	Investment and savings	Total
1	2	3	4	5	6	7	8
1. Teachers colleges	13.0	9.6	19.4	12.0	30.1	15.9	100
2. University of California faculty[a]	17.3	9.4	17.2	13.1	30.4	12.7	100
3. Richards, Mrs. E.[b]	25.0	15.0	20.0	15.0	25.0	0.0	100
4. Metropolitan Life Insurance Company, New York	22.0	15.0	23.0	14.0	11.0	15.0[c]	100
5. Anglo-California Trust Company, San Francisco[d]	20.0	12.0	25.0	0.0	15.0	28.0	100
6. Society for Savings, Cleveland[e]	21.3	15.0	25.0	13.7	12.5	12.5	100
7. Peoples Savings and Trust Company, Pittsburgh....	16.0	14.0	15.0	15.0	13.0	27.0	100
8. Bank of Italy, San Francisco[f]	18.3	18.3	15.0	20.0	15.0	13.0	100
9. Pacific Oil Company, Amalgamated Oil Company, and Affiliated Company[g].	25.0	11.7	18.3	13.3	20.0	11.7	100

[a] Peixotto, Jessica B. *op. cit.* Table XXXII, p. 143.
[b] Richards, Mrs. *Cost of Living* (apportionment for $4,000 in 1900) New York, John Wiley and Son, 1900. p. 39.
[c] Includes 8 percent for insurance.
[d] Size of family not given. No explanation of classification of items. Item under shelter called "maintenance" probably includes both shelter and house operation.
[e] Size of family not given.
[f] Income of $3,600.
[g] Income of $3,600.

VI. CONCLUSIONS

Several pertinent facts are to be discerned in the foregoing comparison.

A. The general income and the cost of maintaining a certain standard of living are not conducive to large families among members of the teaching profession on the college or university level. The faculty groups compare somewhat closely with the average urban family in this regard.

B. Members of teachers college and University of California faculties are beyond middle age by the time they attain the better positions. Even these positions do not pay enough in monetary returns to assure the instructors a reasonably comfortable and carefree old age.

C. In comparison with the incomes of other professional men, those of college and university instructors appear to be rather low, especially when the standard of dress and living required of these groups is considered.

D. A comparison of median income, (Table V), and median expenditure shows that the latter exceeds the former in the case of both groups.

This is interesting and leads to the conclusion that in neither group is the balance between income and expenditure well maintained. In fact, in a number of cases, the expenditure was the greater, and the deficit for the year was met by borrowing. In many other cases, there was no margin of saving. Thus, while some have what might be called a margin of safety between earning ability and necessary expenditure, others fail to attain even a balance.

E. It is doubtful whether an instructor can put forth his best efforts when he must pay so much attention to the matter of "making both ends meet" in a financial way. It may be inferred that this engages the attention of the majority of the faculty members included in this report. If best results are to be obtained, salaries should be sufficiently large to maintain a good standard of living, and at the same time provide for future need.

SHORTER ARTICLES

THE EFFECT OF EXEMPTION FROM FINAL EXAMINATION ON THE DISTRIBUTION OF TERM GRADES

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THE practice of exempting students from final examinations has been evaluated experimentally by Morley.[1] He advances the following arguments in favor of the exemption system:

"1. None of the advantages of final examinations as they may have existed heretofore will be sacrified by permitting exemptions.

2. High grade students will continue to perform as efficiently in class rooms under the motive of avoiding examinations as they did when examinations served as a kind of 'Sword of Damocles' over their heads.

3. Other students of average achievement will be inspired to greater effort throughout the term in order to obtain the coveted exemption.

4. Teachers will be relieved of a great amount of work in reading and marking papers during examination week.

5. The general moral tone of the school will be improved by voluntarily granting to the student body the opportunity of earning relief from an irksome task which keeps them in a constant state of anxiety regarding promotion."

Odell[2] has questioned the argument that the exemption system is sure to improve the general morale of the school. His point of view is expressed in the quotation given below:

"In fact it frequently has just the opposite effect, inasmuch as it comes to be looked upon by pupils as more or less of a disgrace to have to take examinations. . . . The whole exemption system tends too much to make the examination a penalty and a disciplinary device rather than an integral and educative part of the instructional process."

The present writer questions the first contention of Morley. Exemp-

[1] Morley, E. E. "Final Examinations and the Effect of Exemptions," *High School Teacher*, II (March, 1926), 90-91.

[2] Odell, C. W. *Traditional Examinations and New-Type Tests.* (New York: The Century Company, 1928), p. 51-52.

tion does cause the loss, in the case of the students exempted, of one of the chief advantages of examinations—their function as a measuring instrument. Term grades are in all probability less reliable when no examination is administered at the end of the course. Research is needed on precisely this point, but it seems reasonable to suppose that a more representative sample of an individual's ability is secured when in addition to scores obtained during the course of a semester, the score on a final examination is included with appropriate weight being given to it. Fairness to the student demands that he be measured comprehensively.

It is possible that exemption from final examinations tends to reduce the reliability of the term grades assigned in another way. The data presented are inadequate since they represent what happened in one course in one school and for only one semester. They should be substantiated by other data from other courses and schools before they may be accepted as revealing an inevitable effect of the exemption system. Figure I represents the distribution of term grades of 333 students in elementary college chemistry. Students were exempted from the final examination if their averages, prior to the final, were 80 or better. It appears from the distribution obtained that many students whose averages lay between 70 and 80 were prodded over the exemption line by their instructors.

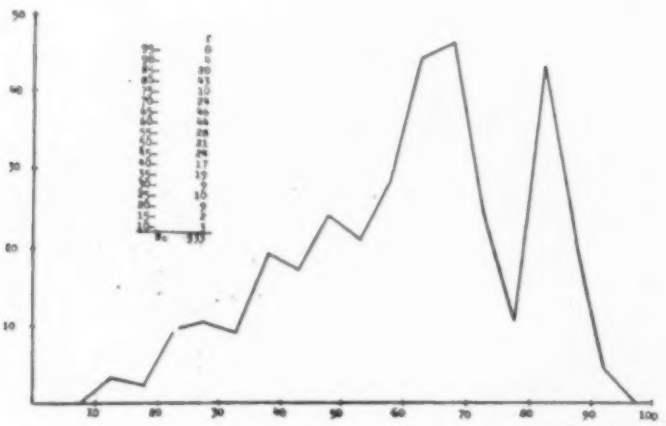

FIGURE I

DISTRIBUTION OF FINAL TERM GRADES, 333 STUDENTS IN CHEMISTRY 1 GEORGIA SCHOOL OF TECHNOLOGY, FIRST SEMESTER, 1926-7

If exemption had not been practiced, it is probable that the distribution would not have exhibited the break between 70 and 80, nor would there have been so many cases above 80. It is commonly accepted that measures of abilities, for a large number of cases, tend to distribute themselves according to the normal curve. It is also a possibility that a skewed curve should be expected for measures of the abilities of freshmen students where entrance requirements have not been sufficiently discriminating. There does not seem to be any justification, however, for the shape of the curve in Figure I, around the exemption point. The break in the curve is an abnormality indicative of poor measurement of abilities.

THE MENTAL ABILITIES OF ADULTS IN SCHOOL

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ONE of the issues in the field of Adult Education is that which is concerned with the indiscriminate promotion of courses. If quality is to be the ultimate objective of education, it follows that more attention must be paid to the mental abilities, interests, needs, and activities of the adults who participate in the various courses. The differentiation of courses to meet individual differences due to previous education, maturity, socio-economic background, near and remote ancestry, is an essential part of the program of education for adults.

The problem for investigation, therefore, may be stated as, "The mental abilities of adults as related to adult interests, needs and activities." In this study, however, only the distribution of mental abilities is shown. While the method employed in the investigation involved the use of several group tests, personal interviews, and questionnaires, as previously stated, only the results of the group tests are presented at this time.[1]

The results of the investigation are shown in Table I which is a composite of all the tests.

[1] The complete study entitled, "The Mental Abilities of Adults as Related to Adult Interests, Needs and Activities," is published in Bulletin Number 2, Series 4, 1930, Division of Adult Education, Cleveland Board of Education.

TABLE I

A COMPOSITE PICTURE OF THE MENTAL ABILITY *6 3,819 ADULTS REGISTERED FOR COURSES UNDER THE DIRECTION OF PUBLIC EDUCATION AS MEASURED BY SEVERAL TESTS*

Test	No. of Adults Tested	Percent very Superior	Percent Superior	Percent normal	Percent slow
1. Thorndike Test of Word Knowledge..	2400	1.6	9.0	68.0	21.3
2. Otis Self-Administering, higher form..	602	2.7	12.8	60.9	23.6
3. Otis Self-Administering Test, higher form, (second group).....	287	11.1	10.1	62.1	16.7
4. Otis Self-Administering, Int.....	28	10.7	14.3	60.7	14.3
5. Terman Group Test of Mental Ability	422	5.2	8.1	67.1	19.6
6. Ohio State Psychological Test.....	80	6.2	6.2	60.3	26.1

*Calculated on the basis of percentile rank.

Consider this information graphically and it may be seen that the large percentage of these adults participating in public school courses are average American citizens. Sixteen percent are superior or very superior, while twenty percent may be classified as being mentally slow. The distribution of ability is shown graphically on Figure I.

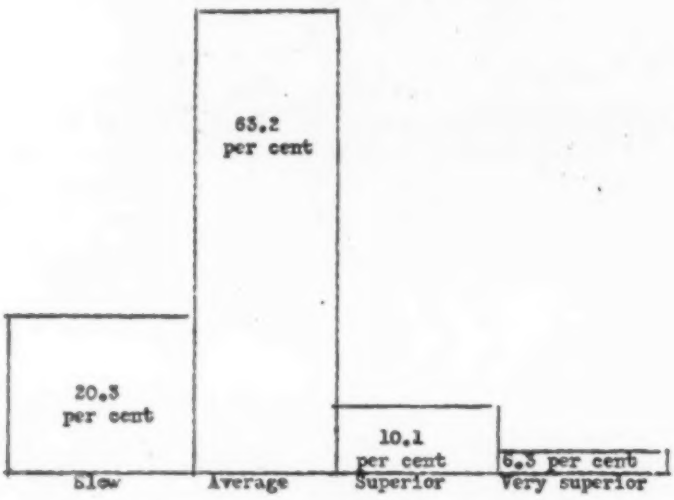

FIGURE I

THE DISTRIBUTION OF MENTAL ABILITY OF ADULTS AS SHOWN BY THE AVERAGES OF SIX TESTS GIVEN TO 3,819 PARTICIPANTS OF THE EDUCATIONAL PROGRAM FOR ADULTS SPONSORED BY THE CLEVELAND BOARD OF EDUCATION

The results of the Thorndike Test of Word Knowledge are shown in Figure II. The test was given to 2400 adults who were registered for a variety of courses. It represents a random sampling from the complete registration.

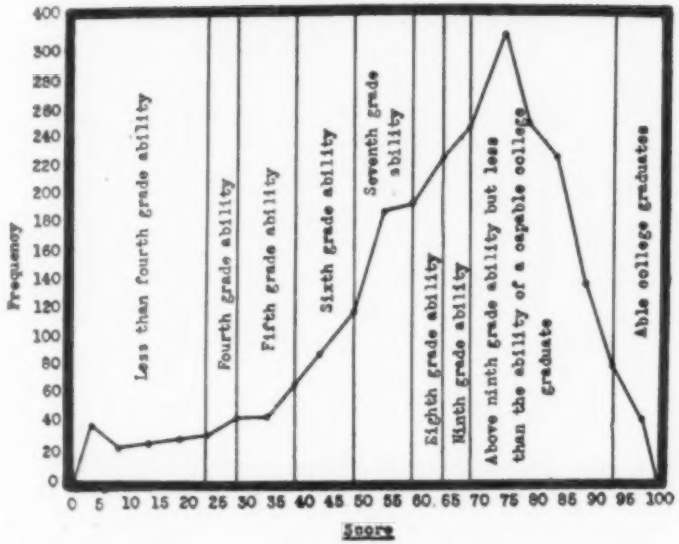

FIGURE II

A Graph Showing the Distribution by Ability of 2400 Adults According to the Results Obtained on the Thorndike Test of Word Knowledge and Based upon Norms Established by the Test

SUMMARY AND CONCLUSIONS

The data are significant for an adult education program not only in curricula designed to meet the formal credit, diploma, or certificate requirements, but, also, in the organization and promotion of informal, non-credit courses. The following conclusions may be drawn from the data herein presented:

1. The 20.3 percent who registered as slow on the tests should definitely be eliminated from college preparatory, diploma, and certificate courses.

2. Adults with superior or very superior mental ability as indicated by a variety of tests, (and in this investigation 16.4 percent of the group attained these levels), should not be forced to travel at the same pace as those with lower ability. Courses must be broken up into units, thereby permitting adults to progress at their respective rates, speeds, and levels of mental ability. An objective test should be given upon the completion of each unit and a standard test upon completion of the course.

3. The distribution of mental abilities among adults as indicated by this investigation indicates the need for a guidance program which will

be based upon a careful analysis of the individual's needs, interests, activities, and abilities. To depend upon interest alone as a medium for the organization of courses or the counselling of individuals is to ignore other factors of equal or greater importance in the educational process.

4. The results of the Ohio State Psychological Test indicate that 26.1 percent of the graduates of the college preparatory course for adults would likely fail to profit by a college experience. There should be, therefore, a differentiated curriculum in evening schools that would permit the careful and early selection of those who are preparing for college and, similarly, of those who are not interested in college but in a general high-school course with specialization in commerce and business, technology, or trade.

5. It is safe to say that approximately eighty-five percent of adult groups already registered for courses are capable of profiting by their new educational experience. It is doubtful if the other fifteen percent are worth expending time, energy, and money on.

Adults are entitled to as much education of the kind they are able to assimilate as a community is able to provide. If continuing education means, however, that there must be stimulating agencies to awaken men from their own inertia, to awaken men from a contented day dream, then the process is fundamentally wrong and should be discouraged in every detail. Those who would stimulate artificially the entire community to improve itself by taking courses, are injuring not only the community but also the adult education movement. Interest in self improvement must be real and the urge must come first from within the individual. Too many of those who need sound instruction in some of the fundamentals of life have been sold courses far beyond their comprehension, interest, or assimilative ability. The interests of adults in continuing their education must be genuine and must develop as a result of a real need. The process, otherwise, becomes one of schooling, an expensive process and one in which public educational institutions cannot well afford to participate.

ABILITIES AND DISABILITIES OF COLLEGE STUDENTS IN ELEMENTARY ALGEBRA

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That some students come to college with deficiencies in knowledge of the fundamentals of algebra is well known by most college teachers

of mathematics. Deficiencies in algebra, because of their relation to college physics, college algebra, and trigonometry, would seem to constitute a distinct handicap in the successful pursuit of college work. In some instances, in fact, such disabilities on the part of the students are the most frequent cause of failure. There is some evidence that this is actually the case.

Thorndike[1] has clearly shown, for example, that physics problems, among others, require the ability of the student to choose the appropriate formula, to make substitutions, and to solve the resulting equations. These involve such skills as clearing of fractions, transposing, combining, and, frequently, the finding of the numerical square root and other fundamental skills.

For the solution of problems in chemistry, the ability to form a correct proportion is of high value. The algebraic operations that can be applied with considerable advantage in this field are those dealing with proportions of various kinds. Obviously, a student who is deficient in certain essential algebraic skills is at a considerable loss in attempting to solve problems of this type.

The data of the present study were obtained by giving the Hotz First Year Algebra Scales to two freshman classes in college algebra. These students had pursued high-school algebra for an average of approximately two and one-half semesters, and, at the time the tests were given, had completed approximately a third of the first year's course in college algebra.

RESULTS

In considering results, it is well to keep in mind that the Hotz Algebra Scales are time tests. This fact may account in a large measure for the relatively high percent of omissions (average, 16 percent) in the "Equations," "Problems," and "Graphs" tests. Many students, of course, are very deliberate in solving algebraic operations and some are slow, which necessarily places them at some disadvantage in a time test. An idea of the individual differences in speed may be appreciated from the fact that one student solved 9 problems correctly in 4 minutes, while another required 15 minutes to work 2 problems.

[1] Thorndike, E. L., et al. *The Psychology of Algebra.* New York: The Macmillan Company, 1924.

Table I indicates the scores for each of the five scales, together with the medians for the college group and the median standard of achievement for first year high-school students at the end of a year's work. The percent of college students scoring below this standard is also given.

Results from test to test indicate interesting variations. Two students received a score as low as 2 in the addition and subtraction scale, while in multiplication and division one student dropped as low as a score of 1.

TABLE I

A. Distribution of Scores Made by 52 College Students (90 Percent Freshmen) on Each of the Five Hotz First Year Algebra Scales

B. The Median Standard of Achievement for Each Scale.

C. Percents Scoring Below Standard Medians for First Year High-School Students.

Number Prob. Correct	Add. and Subtr.	Mult. and Div.	Equation and Formula	Problems	Graphs
12		1	2		
11	1		1		
10	1		4		
9	4	3	5		
8	6 S.M.**	7 S.M.	9 S.M.	3	4
7	10 M.*	3	8 M.	12	4
6	11	15 M.	13	11 M. S.M.	9 S.M.
5	8	11	7	7	15 M.
4	9	9	3	12	9
3		2		7	9
2	2				2
1		1			
Total	52	52	52	52	52
Standard Median	7.9	7.9	7.8	5.6	5.6
Group Median	6.6	6.2	7.4	6.0	5.4
Percent Scoring Below Standard Median	77	79	60	50	67

*M.—Group Median.
**S.M.—Standard First Year High-school Median.

Likewise, two students in the graph test each received a score of 2. The largest number of low scores (3 and below) is found in the problem and the graph scales, the total of such scores being 18. In the two tests covering the four fundamental processes, an average of 77 percent scored below the standard norm while the other three averaged 59 percent below this standard. It is interesting to note that the lowest group median is found in the graph scale while the highest appears in the equation scale. An average of only 37 percent made scores at or above the standard first year high-school median.

An analysis of the errors discloses that the major difficulties encountered in the addition and subtraction scale centered around the four operations involving fractions. These were missed entirely by an average of 81 percent of the group. Likewise, in the multiplication and division scale, the only four operations involving fractions were missed by an average of 53 percent and omitted by an average of 22 percent. In the first three scales, an average of 56 percent failed to solve 13 out of a total of 14 exercises involving fractions. Mention may also be made of the fact that 86 percent failed to solve a rather simple problem in addition of radicals (20 plus 45 plus $\frac{1}{5}$) and 44 percent missed entirely a problem in multiplication of radicals.

The following are types of errors found in the equation and formula scale, together with the frequency of occurrence of each type, expressed as percent of the total number of errors made in the scale.

Kinds of Errors	Percent of Total Errors
Errors in sign transposition	25
Performing wrong operation in solving for the unknown	13
Simple arithmetical errors	18
Errors in clearing of fractions	12
Errors in inverting fractions	9
Errors in factoring	9
Errors in substituting value of X	5
Errors in finding square root	5
Incomplete solutions	4
Total	100

In the "Problems" scale, it was found that each problem was missed by an average of 27 percent of the students, as against an average of 40 percent for each problem of the scale involving various operations in multiplication and division. Omissions in the former scale averaged 33 percent as compared to 15 percent in the latter. In this scale, the major difficulty seemed to center around the forming correct equations. Solving the equation is not required. The errors in equation construction occurring in three typical problems will suffice to indicate the wide variation of the types of errors in these operations.

Problem 4: "A gold watch is worth ten times as much as a silver watch, and both together are worth $132.00. How much is each worth?" Errors—23 percent. Omissions—None.

Correct equation: $x + 10x = 132$

Incorrect answers given	F
$y + 10x = 132$	6
$x + y = 132$	2
$10x = 132$	2
$10x - y = 132$	1
$10x + y = 132$	1
Total	12

Problem 7: "The total number of circus tickets sold was 836. The number sold to adults was 136 less than twice the number of children's tickets. How many were sold of each?" Errors—40 percent. Omissions—6 percent.

Correct equation: $2x - 136 = 836$ Incorrect answers given	F
$x + x - 136 = 836$	3
$136 - 2x = 836$	4
$2x - x - 136 = 836$	3
$2x - 136 = x$	1
$x - 136 = 836$	1
$2x - 136y = 836$	1
$3x + 136 = 836$	1
Other answers	7
Total	21

Problem 9: "The area of a square is equal to that of a rectangle. The base of the rectangle is 12 feet longer and its altitude 4 feet shorter than the side of the square. Find the dimensions of both figures." Errors—30 percent. Omissions—32 percent.

Correct equation: $x^2 = (x - 12)(x - 4)$ Incorrect answers given	F
Failure to form equations	4
$(x + 12)(y - 4)$	2
$(x + 12)(x - 4)$	2
$12L - 4W = 11$	2
$x - y = 12 + 4 - 4$	1
$x - y = 12 + x - 4 - x$	1
$x - 12 - y = 0$	1
Other answers	1
Total	14

A word should be said concerning errors made in the "Graphs" scale consisting of eight exercises. The fact that an average of 27 percent of the group were unable to read or construct certain comparatively simple graphs, and further that an average of 38 percent entirely omitted the last four problems, would seem to point to a noticeable lack of knowledge of the elementary principles of graphing on the part of a number of college students.

More specifically, it may be stated that 40 percent of the group were unable to plot correctly the two equations $x+4y=11$, and $2x-y=4$; 46 percent could not convert a Fahrenheit reading to the Centigrade scale from a standard graph; while 36 percent plotted incorrectly the simple equation $x+y=5$. Eight students, or 15 percent of the group, failed to interpret a simple population graph, while 25 percent could not read a graph representing the distance passed over by a man walking at the rate of 3 miles an hour for a number of hours. It would seem from these results that here is a type of deficiency that should receive careful consideration in view of the importance of graphs in modern textbooks.

SUMMARY

The study discloses certain rather clear-cut weaknesses of first year college students in high-school algebra. These weaknesses would seem to be indicated by the fact that an average of 66 percent of the group tested scored below the standard first year high-school norm in the five scales of the test. Omissions averaged 25 percent in the five tests.

The error analysis indicated that, in the first three scales, an average of 56 percent were unable to solve 13 out of a total of 14 operations involving computations with fractions. Some of the error types occurring most frequently were: (1) errors in clearing of fractions, apparently due to inability to find the L.C.D.; (2) errors due to failure to heed changes of signs in combining and removal of parenthesis; (3) incorrect reduction in the case of similar fractions and fractional answers; (4) failure to invert the divisor; (5) errors in removal of parentheses; (6) inability to formulate correct equations proved to be a major difficulty in connection with problem solving; while (7) inability to read comparatively simple graphs proved to be another outstanding deficiency; and (8) marked inability to indicate relationships in terms of algebraic symbols was also found. A considerable number of students seemed to have difficulty in determining whether the problem called for one or two unknowns.

EDITORIALS

SUPERVISION IS TEACHING

There are two aspects to the training of teachers: (1) the institutional training of teachers, and (2) the in service training of teachers. This latter aspect of the training of teachers is also a phase of supervision and is usually referred to as *the training of teachers in service*. The point of this editorial is that the training of teachers in service is *teaching* and that the study of this activity might be improved if it were more generally so defined.

It is customary when one uses the expression, "teaching," to think of instructing pupils, and to employ the more general expression, "professional education of teachers" or "the training of teachers" for the instruction of teachers. Thus, when one speaks of the training of teachers in service, he thinks of teachers' meetings, classroom visitation and conference, demonstration teaching, directed practice, directed observation, and directed reading through bibliographies and bulletins. While these means of training teachers are all effective in certain ways, it is the writer's belief that something is lost because of the failure of many supervisors to relate these practices to the more general field of teaching. Supervision, from this point of view, is, after all, the teaching of teachers how to teach. The successful teacher is one who has acquired the abilities, knowledges, skills, attitudes, and ideals essential to the successful performance of the teaching act. One sometimes acquires the impression that some supervisors believe that knowledge alone is the road to success in teaching. To teach successfully, one must have acquired not only knowledge, but special skills, favorable attitudes and ideals.

As one looks to the more general field of instruction, he finds there a considerable amount of suggestive material for supervisory teaching: (1) Discussions of educational curricula and objectives. These discussions suggest the need for investigations of the curricula and of objectives in connection with supervision. (2) Discussions of the organiza-

tion of subject matter for teaching purposes: the logical and psychological organization of subject matter; inductive and deductive methods of instruction; learning by doing versus the mastery of subject matter; working from the simple to the complex versus complex to simple, concrete to abstract versus abstract to concrete, particular to general versus general to particular; etc. (3) Discussions of the factors conditioning learning: intelligence, aptitude, attitude, desire to excel, attention, distribution of practice, health, character, emotional stability, methods of work, etc. (4) Discussions of the learning process, how learning takes place, the transference of training, etc. (5) Individual differences. (6) Educational diagnosis and remedial instruction. (7) Improvability: the kind, amount, and rates of learning under instruction. (8) Experimental studies of teaching procedures. And (9) the measurement of the results of instruction. These discussions are all suggestive of the kinds of researches that need to be made in the development of new programs for the improvement of the training of teachers in service.

In this connection, the writer should like to say that he believes that too little attention has been given to skill in the performance of the teaching act. Learning to teach is very much like learning to drive an automobile or learning to play tennis except that it is infinitely more complex and varied and involves in a larger degree the verbal modes of behavior. It is probably more akin to the learning of how to deliver an address so as to hold an audience. Demosthenes mastered the enunciation of words by practice on the seashore with pebbles in his mouth and this illustrates only one of the many details of manner and appearance which one must acquire in learning to address an audience. There would seem to be need for a psychology of skill in teaching. One should want answers to questions like the following: How does one acquire skill in teaching? What is the relation of knowledge to skill? What is the relation of attitude to skill? What is the relation of ideals to skill? etc. A similar point might be made of the lack of attention to details of appearance and of manners. One becomes aware of a great number of issues in the training of teachers when one thinks of supervision as teaching.

A. S. Barr

REVIEWS

Address all communications relative to book reviews to Editor E. J. Ashbaugh, Miami University, Oxford, Ohio.

CAIRNS, LAURA. *A Scientific Basis for Health Instruction in Public Schools.* University of California Press, 1929. Volume 2. 105 pp.

In this work, there are five clearly defined steps. First, the author determines objectively the health needs of people. Second, she studies what authorities consider to be the means of taking care of these needs. Third, these means yield certain essential items which form the basis of the checking list for evaluating courses related to health. Fourth, these same essential facts of health are translated into a test which is given to junior and senior high-school pupils. Fifth, based on the results of the appraisal of courses and the test, the author makes recommendations for the improvement of health instruction.

The first task of the investigator belongs to the general class of curriculum investigations which utilizes public documents and social statistics to determine objectives. In this case, the data were statistics of mortality, disabling diseases, minor ailments, and physical defects. The second task consisted of the selection of items of knowledge that are fundamental to health. The sources used for this purpose were works of scholars and experimenters in public health and medicine. The facts are reduced to a compact summary of essentials.

With these facts as a basis, the third task of the investigator was to construct a check list and to submit it to the teachers of courses involving instruction in health in seventeen junior and senior high schools. In the senior high schools, physiology presents the essential health material better than any other course, but it is far from adequate. In the junior high school, biology and general science are the best media of health instruction. Instruction appears to be strongest in personal hygiene which has least support in scientific knowledge, and weakest in epidemology which has strongest support in scientific knowledge.

The fourth task was a further check of the present status of health instruction. A test consisting of 51 items based on the fundamental facts of health previously determined, was given to 1823 pupils who made an average score of 53 percent. The analysis of the data obtained by means of the check-list of health items and by means of the testing program, yielded certain conclusions. Time is wasted on the teaching of non-essentials. The chief responsibility of health instruction should not be placed on the teachers of physical education. The present scheme permits the students to go through school with a limited amount of health information. It is necessary to work out a carefully organized sequence of subject-matter and health for all pupils.

The study is clear, direct, and well organized. Although any of the four divisions of Miss Cairns' study could have made a major problem of investigation,

her conclusions, in the main, are warranted, and within the limits of the data studied. Along with a similar study made by Lerrigo, it belongs with the best of the curriculum investigations. The study appeals to this reviewer especially, because it goes to certain direct and scientific sources outside of education for its material.

HENRY HARAP
Western Reserve University

ANDRUS, RUTH, AND PEABODY, MAY E. *Parent-Child Relationships.* John Day Co.

Parent education is rapidly assuming its rightful place in publicly supported educational institutions, but its methods must differ from those usually in vogue therein.

This book presents not only material for parent education groups, but also suggests methods for presenting this material. The contents are divided into ten study units, all of which deal with the general subject of human relationships. The particular relationships presented for discussion are parent—child, brother—sister, parent—parent, and the relationships of adults and children to society and the community at large. Each of the study units is divided into, (1) a statement of objectives, (2) questions which are to serve as guides for discussion, (3) suggested projects or "experience guides," which serve as guides for studying the individual home situation, and also suggest practical applications of the principles which have been discussed, and (4) references, both technical and fiction. Each unit is followed by a section containing excerpts from a carefully selected list of books and articles, and pertaining to the subject of discussion. The authors state that their suggestions for presenting the material are designed for leaders rather than teachers, *i.e.*, they wish to encourage group thinking and solution of parental problems by the parents themselves, rather than the handing out of ready-made formulae by so-called experts and the blind acceptance of these formulae by the parent.

Both the choice of material and the method of its presentation are excellent and should stimulate intelligent thinking on parental problems.

It seems evident, however, that the book will be used with the greatest success by those groups whose membership represents a rather high educational background. The so-called "underprivileged" parent and even the parent of average intelligence will need to be given something written in very much simpler language and of a more direct appeal to actual home situations than is this book.

Unfortunately, it is still true that parent educators are doing the least for that group of parents who need our most urgent help. It is clearly recognized that one of our most difficult problems is that of preparing study materials suitable for such parents. Our terminology and vocabulary present the first obstacles. The individual who can translate some of our very good books on parent education already on the market into very simple language will be doing a very real service to this group of parents. Even though the authors state in the Introduction that the basis for grouping parents for study should be according to parents' needs rather than educational background, it has, nevertheless, been the experience of others who are trying to be of service to parents, that it is difficult, if not impossible, to hold the interest of parents with study material which is too advanced for their comprehension. And we must interest them if we wish to educate them.

The authors have prepared a most help-

ful set of outlines. The book should be of definite service to many parents who are eager to meet their many problems intelligently.

AMALIE K. NELSON
Ohio State University

JOHNSON, PALMER O. *Curricular Problems in Science at the College Level.* Minneapolis: University of Minnesota Press, 1930. viii + 188 pp.

So that college botany may more satisfactorily fill its intended rôle in the college curriculum, the present study is an attempt to evaluate the beginning course in college botany in terms of the functions it performs for the courses for which it is a prerequisite.

The study is based upon an investigation of the elementary botany work offered at the University of Minnesota, and involves an exhaustive study of that institution's offerings in this field from beginning of the instruction of this subject to the present time.

The difficulties, in the beginning course, of meeting the demands of all sequent courses are ably presented by summaries of the content and method of teaching in the elementary course and the courses to which it is prerequisite. There seems to be a weakness in the judgment of service performed that is based almost entirely upon factual content without recognizing service which might be performed in the field of increased skills, modified attitude, and changing interests.

The reviewer remembers his experience with first-year college botany, which made him vow never again to take a botany course in spite of the fact that he came to college to prepare for work in forestry. While he finds, in the present study, a summary of the preferences of its students who take up elementary botany, he looks in vain to discover whether or not the course encouraged or discouraged further work in the field in which an initial preference existed. It would seem that the success of a course might be based to a considerable extent upon the interests it fosters in the students that take it as well as on the facts remembered for use in other courses. This does not seem to be recognized in the present study.

The method followed in the study justifies the recommendations made as to reallocation of certain studies in the general college course and should be of interest to all concerned with the teaching of botanical subjects at the college level. Were its findings put into practice it would undoubtedly lead to a reduction of duplication of activities and result in consequent improved use of time during the students' period of training. The study is of distinct value though it cannot be considered as having exhausted the possibilities of further profitable study of the problem.

E. LAWRENCE PALMER
Cornell University

MEYER, HAROLD D., AND EDDLEMAN, SAMUEL MCKEE. *Financing Extra Curricular Activities.* New York: A. S. Barnes and Company, 1929. xii + 132 pp.

Within the past ten years a wealth of material covering the field of the extra-curricular activities has been published. Following the publication of the Twenty-fifth Yearbook of the National Society for the Study of Education, numerous books and treatises appeared on various phases of extra-curricular activities. The Extra-Curricular Library was conceived as a library of material in this field, to be published in twelve volumes according to fields already organized and to be added to as other activities in the extra-

curricular field could be developed. The first volume of this library has recently come from the press.

The author of this volume has endeavored to give a cross-sectional view of the types of plans for financing an extra-curricular program, now in use. He ascertained from the principals of the outstanding schools of the United States the plan or plans for such financing in their own schools. The following information was requested: "(1) How do you raise money to finance extra-curricular activities?" "(2) What methods do you use in the equitable distribution of this money?" "(3) How do you handle funds, that is, what is the system of accounting used?" "(4) Give ideas or suggestions of your own about raising and administering funds," and "(5) Send bulletins, leaflets, charts, diagrams, feature cuts, or other material that will aid in clearly explaining your plan."

The material of this book is divided into two parts. The first is a running account of practices found among the schools as contained in the three chapters: "How Some Schools are Raising Money, Methods of Distributing Finances and Accounting for Moneys." The second part consists of four appendixes (or appendices) in which systems of financing as found in particular high schools are given in complete detail including the forms which the school uses in operating its financial program for the extra curricular activities. These appendixes appear to be the most valuable part of the book. The school principal, zealous to introduce change in the financial system of his activities has long been desirous of sample systems upon which to pattern that of his own school. These have been supplied here. Eighteen pages are used in giving the school fund budget, cash receipts, and expenditures of a typical school.

The author has not contributed anything new to the field of extra-curricular activities, though he has culled from the general literature of the field the material which applies directly to the problem of finance. No attempt has been made to tie the accounting for moneys in this field with that of the public money of the school district. As a collection of financial systems and programs, it undoubtedly represents a contribution to the movement for the improvement of financial accounting for moneys raised through extra-curricular activities.

Washington, Pa. M. B. HORNER

SAYERS, EPHRAIM VERN. *Educational Issues and Unity of Experience.* New York: Columbia University, 1929. vii + 113 pp.

At one point in this book the author introduces a statement from Dewey in which the latter is critical of psychological theory that takes "the behavior of fragments of an organism as if they were the whole of behavior" (pp. 42-43), and the quotation, though not specifically used for that purpose, effectively serves as the key-note for the study. The writer is concerned throughout with the development of an approach to education that will preserve the integrity of the individual's experience.

The "wholeness" concept is developed carefully, Mr. Sayers dipping into recent developments in philosophy, biology, physiology and psychology to find support for the view that education will engage in naught but abortive acts if it builds its methods apart from the position which finds that human nature is to be understood only as each part is seen in relationship to the whole and as the

whole is integrated with the environment in which, and through which, it has its being. This newer view of the organism in its manifold, and integrated relationship with its environment (Chapters 3, 4, 5) is stated here with a certain simplicity and general effectiveness.

When we turn to the other tasks which the book essays, the same clarity and simplicity is not always in evidence. Prior to the development of his conception "of the nature of integrity of experience" the author locates twenty *prima facie* issues in educational theory as this is presented in the literature. In his statement of the issues, Mr. Sayers is concerned with shaping up differences as "separations among the various factors in the individual's educative experience" or "unities or integrations among these factors" are emphasized. The contrasts are set by means of selected quotations and the conflict is then developed by the author to get the representative issue, separation versus unity, into the open. Unfortunately, this issue does not always emerge too clearly. The author frankly recognizes that it is difficult to deal thus with quotations. It is to be regretted, therefore, that the issues were not permitted to emerge through a more fundamental discussion. This would have been much more significant than the presentation of them through quotations that seem not always to imply what Mr. Sayers infers.

In his final chapters, in which the issues are brought to light again to be scrutinized in terms of the "wholeness" concept which the author has developed, the implications of the position for educational method are drawn. This treatment has an unfortunate verbal quality, perhaps because it does not get down to the level of the specific area of educational method nor away from the language of "the unity of experience concept" as here developed. Indeed, there is a distressing formidableness of terminology throughout the entire book. The author undertakes, however, to state a program that orients itself to the more recent concepts that are emerging in science and this should assure the book a welcome.

H. GORDON HULLFISH
Ohio State University

FOSTER, RICHARD A. *The School in American Literature*. Baltimore: Warwick and York, 1930. vii + 199 pp.

Teachers of the history of education in the United States may find in this book materials to brighten a subject that, to many students, seems to be deadly dull. Not that the book is brilliantly written; it is not. In many parts it is prosy, and almost as dry as the courses in history of education, but it does contain a great deal of suggestive material.

The author purposes "to trace the emergence of the school into imaginative American literature in the light of our educational and literary history and of the growing interest in childhood." Education was one of the very foundation stones of the Puritan forbears in New England, and it is small wonder that the schools early crept into the writings of the period.

The author has delved deeply and intensively into the sources, and has unearthed some materials that deserve a wide currency among students of education, notably, the Poetical Works of John Trumbull, Goodrich's Recollections of a Lifetime, and the Prose and Poems of Alexander Wilson. Many other sources are cited but these are chosen as representative of the less well known.

Withal, one is impressed with the relatively unimportant place of the school in

literature, and above all, with the evanescent nature of the writings that have centered around the school. There is no evidence that any of the works of literature discussed in this volume have had a profound effect upon educational practice, or that the schools have been modified because of an aroused public opinion growing out of the writings.

The book will do very well as a chronicle and source of references, but if one is in search of inspiration he will probably have to find it elsewhere. J. A. BAER
Ethical Culture School, New York City

HAEFNER, RALPH. *The Educational Significance of Left-Handedness.* New York: Columbia University, 1929. viii + 84 pp.

This clear-cut study throws considerable light on the old problem of human handedness. The purpose, as stated by Dr. Haefner, is two-fold: first, to analyse the concept of handedness, and second, to seek relations between the common forms of hand dominance and such school factors as intelligence, school achievement, interests, emotions, and physical status of children. The effects of interference with natural handedness, especially in relation to speech defects, were also studied.

The method of investigation was to select the left-handed children from a school containing over a thousand pupils from the fourth to the seventh grades inclusive. For each left-handed child a right-handed mate was found of the same chronological age, sex, and school grade. Comparative data from these pairs of children furnished the material for the investigation.

In his analysis of handedness, Dr. Haefner found that the descriptive terms, "left-handedness," and "right-handedness," were somewhat misleading. He found, not a left-handed type and a right-handed type, but rather, *types* of each. A child might have one hand dominant for one activity and the other hand dominant for other activities.

The results of the second phase of the investigation, viz., the relation of hand dominance to certain school factors explode several old fallacies. It was found that there is no relation of handedness to general intelligence, nor to school achievement. While the right-handed group showed superior hand strength, the hand preference did not seem closely related to the general interests of the children. Both groups suffered from a suprising number of worries but the left-handed group seemed slightly better adjusted to the school situation than did the right. One of the most interesting of the results is the suggestion that change of writing hand does have a bearing on speech defects.

The writer recognizes the fact that the size of his groups (68 in each group) renders statistical reliability uncertain. In spite of this, however, the study has education implications of significance.
Miami University E. E. PATTEN

RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to Editor A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

BAUMGARTEN, FRANZISKA. *Wunderkinder: Psychologishe Untersuchungen.* (Wonder Children: Psychological Investigations). Leipzig, Germany: J. A. Barth, 1930. 184 pp. 80 pictures, 1 colored table.

A contribution to the psychology of gifted children. Nine gifted children, of whom five were musicians, were investigated. In spite of great individual differences, there were certain typical traits common to all which can be explained, on the one hand, by inheritance and, on the other, by influences of environment and education.

COXE, WARREN W., AND SOPER, WAYNE W. "Study of the High-School Teacher in New York State," *University of the State of New York Bulletin*, No. 964 (January 15, 1931), 42 pp.

A study of the high-school teacher in New York state reporting data on her general training, professional training, experience, number of subjects taught, subject combinations, certification, salaries, nationality, place of birth, etc.

DEWEY, JOHN. *Demokratie und Erziehung: Eine Einleitung in die Philosophische Padagogik.* (Translated by Erick Hylla.) Breslau, Germany: F. Hirt, 1930. 565 pp.

A translation of Dewey's "Democracy and Education" into the German language.

GRETH, MORRIS S. *Leadership Training Through Local Church Agencies: A Study of Outcomes.* Doctor's Thesis in Education. Philadelphia: University of Pennsylvania, 1930. 164 pp.

A study to determine the essential outcomes that a denominational leadership training school should strive to attain in its students.

HILTON, EUGENE. "Junior College Book List," *University of California Publications in Education*, VI (December 31, 1930), 1-84.

Following the procedure of pooled judgments, the author offers a selected list of collateral reference books for each of the junior high-school subjects.

"Seventh Annual Conference on Elementary Supervision," *Bulletin of the School of Education, Indiana University*, VI (July, 1930), 102 pp.

Contains reports by Mrs. Caroline M. Wildrick on "An Experiment with a Free Reading Hour," by Mr. Harold Littell on "The State Course of Study in Arithmetic," by Mr. Wendell W. Wright on "Measurement and the Curriculum," by Mr. G. T. Buswell on "Laboratory Studies of Reading," by Mr. Clifford Woody on "Knowledge of Arithmetic Possessed by Young Children," by Miss Blanche Fuqua on "Supervision in the Elementary Schools," by Miss Frances Mason on "The Supervisor of Arithmetic from the Standpoint of the Special

Supervisor," and, finally, by Mr. C. C. Underwood on "Supervision of Reading in the Elementary Schools."

SMITH, HENRY LESTER, AND FRANZÉN, CARL G. F., Directors. "Coöperative Studies in Secondary Education," *Bulletin of the School of Education, Indiana University*, VI (March, 1930), 121 pp.

A report of coöperative studies in secondary education including accounts by Mr. Charles R. Parks on "Criteria for Determining the Content of the Public Speaking Course for Secondary Schools," by G. H. Gillespie, C. N. Lancaster, R. N. Auble, and J. C. Edwards on "Better and Simpler Organization in Schedule Making," Gertrude Thuemler on "Case Studies," R. R. Stewart and F. R. Finehout on "The Relative Value and Position of Subject-Matter in a Two-Year Vocational Course in Electricity," by Fred R. Gorman and DeWitt S. Morgan on "A Study of the Effect of Definite Written Exercises upon Learning in a Course in American History," by Earl W. Ensinger on "The Characteristics of the 150 Senior Honor Roll Graduates of the June, 1927, Graduating Class at the Arsenal Technical Schools," by F. H. Gillespie on "A Study of Transcript Errors Made by Stenography Pupils," and by Margaret Burnside on "The Use of Précis, Comprehension, and Vocabulary Tests to Determine Comprehension of a Literary Selection."

"Some Methods Employed in the Choice of Books for Children's Libraries," *International Bureau of Education Bulletin*. Geneva: 44, Rue des Maraichers, Geneva: International Bureau of Education, 1930.

The report of an enquiry undertaken by the International Bureau of Education in which the procedures used in Great Britain, Germany, Austria, Italy, Holland, Norway, Sweden, Switzerland, Czechoslovakia, and the United States are reported. Bibliography.

SOPER, WAYNE W., AND BAER, JOSEPH A. "A Study of the Clerical Duties of District Superintendents of New York State," *University of the State of New York Bulletin*, No. 962 (December 15, 1930), 44 pp.

A study of the clerical duties of district superintendents of New York state presenting data on the time spent on reports, correspondence and related clerical work, activities that district superintendents would undertake if relieved of clerical work, etc.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

KENNEDY, KATHERINE M., AND SHANNON, J. R. "An Experiment in Directing Observation," *Educational Administration and Supervision*, XVII (March, 1931), 205-212.

An experimental study from which the author concludes that the effectiveness of observation can be enhanced by personal direction during the course of the classroom procedure.

MILLER, JOSEPH. "Causes of Failure and Success in School," *Educational Method*, X (March, 1931), 327-333.

This article reports data for the following factors: mentality, language, reading, conduct, attendance, physical defects, personality, personal appearance, home conditions, and group instruction, showing the percentage of bright and dull for each.

PALM, REUBEN R. "The Determinants of Size and Popularization of High Schools," *School Review*, XXXIX (March, 1931), 186-195.

A study of a number of probable determinants of the size of high schools, from which the author finds no determinant effective, except the extent to which the population of the state is urban.

ROE, WARREN A. "Comparative Costs of Integrated All-Year Schooling and of Part-Time Schooling," *Educational Method*, X (March, 1931), 350-358.

All-year schooling gives more education, better school service, increased educational opportunity, more economical operation and construction cost, and a lower tax rate.

SEAMSTER, FREDERICK C., AND DAVIS, ROBERT A. "The Efficiency of Training School and Public School Pupils," *Educational Administration and Supervision*, XVII (March, 1931), 224-231.

A statistical study of training school and public school pupils which showed that, while public school pupils have a slight advantage, the difference is not marked.

EXPERIMENTAL STUDIES OF LEARNING AND TEACHING

COULTER, MERLE ALINE. "Comprehension and Retention in Reading Through Repetitions," *University of Pittsburgh School of Education Journal*, VI (December, 1930), 63-70.

An experimental study from which the author concludes that it would be better to aim to increase the efficiency of the first reading than to increase the number of readings of the same material.

GUILER, WALTER SCRIBNER. "Improving Ability in Verb Usage," *Elementary School Journal*, XXXI (March, 1931), 524-530.

An experimental study from which the author concludes that ability in the use of verbs is a composite of ability in many specific usages, and that the learner may be expected to encounter difficulty in one or more of the many items. Marked improvement in ability to use verbs may be expected when a remedial program first discovers principles which are difficult for the group and for individuals, and then provides self-teaching and practice materials suited to individual needs.

MORPHETT, MABEL VOGEL, AND WASHBURNE, CARLETON. "When Should Children Begin to Read?" *Elementary School Journal*, XXXI (March, 1931), 496-503.

An experimental study from which the author concludes that, by postponing the teaching of reading until children reach a mental level of six and a half years, teachers can greatly decrease the chances of pupil failure and discouragement and can correspondingly increase their efficiency.

PITTS, LEMUEL, AND DAVIS, ROBERT A. "A Comparison of the Analytic and Synthetic Methods of Teaching Geometry," *School Science and Mathematics*, XXXI (March, 1931), 333-339.

The author concludes that the synthetic method possesses a distinct advantage over the analytic.

ROGERS, HELEN. "Self-Appraisal Ability in Its Relations to Mental Ability and Age," *University of Pittsburgh School of Education Journal*, VI (December, 1930), 50-56.

A study of the K-D-N self-appraisal device, from which the author concludes that such a device is worthwhile.

SYMONDS, PERCIVAL M. "Homogenous Grouping," *Teachers College Record*, XXXII (March, 1931), 501-517.

A review of recent studies bearing on homogeneous grouping with critical comments upon the appropriateness of current practices.

TINKER, MILES A., AND PATERSON, DONALD G. "Studies of Typographical Factors Influencing Speed of Reading. V. Simultaneous Variation of Type Size and Line Length," *Journal of Applied Psychology*, XV (February, 1931), 72-78.

Part V of studies of typographical factors influencing speed of reading, the variable being the simultaneous variation of type size and line length. "The results obtained in this experiment seem to justify the conclusion that *line for line* arrangements varying from a standard text printed in 10 point with an optimal line length of 19 picas yield equally efficient reading performance for 8 and 10 point type, and possibly for larger sizes. The evidence shows that 6 point type with line length reduced as stated is read at a significantly slower rate."

WEAVER, ROBERT B. "The Relative Value of Intensive Study and Extensive Reading in United States History," *School Review*, XXXIX (March, 1931), 217-226.

An experimental study of intensive and extensive reading in history, from which the author concludes that the understanding of United States history gained by seventh grade pupils when they read extensively from carefully selected materials is as good as, if not better than, the understanding which they gain when they study a few selected accounts intensively.

WILSON, FRANK T. "Errors, Difficulty, Resourcefulness, and Speed in the Learning of Bright and Dull Children," *Journal of Educational Psychology*, XXII (March, 1931), 229-240.

The author concludes that, on the whole, the older and brighter children react more efficiently than the younger and duller children for the task studied in this investigation.

PUPIL ADJUSTMENT, GUIDANCE, AND WELFARE

LUND, S. E. TORSTEN. "The Personal Interview in High-School Guidance," *School Review*, XXXIX (March, 1931), 196-207.

An experimental study of the personal interview in guidance in which the author found that the difference in the scholastic achievement of those with and without guidance was only slightly in favor of guidance. The writer, in spite of the results of this study believes that the personal interview may be a valuable device for improving scholastic achievement.

CURRICULUM RESEARCH

"Teaching Sociology:" I. The Teaching and Content of Introductory Courses, by Erville B. Woods; II. A Discussion of the Introductory Course, by Ray Erwin Baber; III. Further Suggestions Concerning the Content of an Elementary Course, by Frank H. Hankins; IV. A Useful Approach, by Carl A. Dawson; and V. A Proposed Reorganization of the Introductory Course, by Malcolm M. Willey, *Social Forces*, IX (March, 1931), 320-343.

A series of articles dealing with the content and organization of introductory courses in the subject of sociology.

MEASUREMENTS, STATISTICS, AND METHODS OF EDUCATIONAL RESEARCH

BROOM, M. EUSTACE, DOUGLAS, JOSEPHINE, AND RUDD, MARION. "On the Validity of Silent Reading Tests," *Journal of Applied Psychology*, XV (February, 1931), 35-38.

A study of the validity of the Stanford, Sangren-Woody, Los Angeles Elementary, Orleans, Haggerty Sigma 3, Monroe (Rate) and Monroe (Comprehension), and Van Wagenen Reading Scales.

EDMISTON, R. W. "A Method of Improving Prediction," *School and Society*, XXXIII (March 21, 1931), 411-414.

An analysis of the effectiveness of different means of predicting academic success.

HOLZINGER, KARL J. "Thorndike's C.A.V.D. is Full of G.," *Journal of Educational Psychology*, XXII (March, 1931), 161-166.

The point of this article is to show that Professor Thorndike's C.A.V.D. Intelligence Test may be thought of as saturated with Spearman's *g* rather than with a number of group factors.

LINDQUIST, E. F. "The Significance of a Difference Between 'Matched' Groups," *Journal of Educational Psychology*, XXII (March, 1931), 197-204.

The purpose of this article is to draw attention to an important error in statistical analysis and to suggest an improved statistical procedure.

MERRELL, MARGARET. "The Relationship of Individual Growth to Average Growth," *Human Biology*, III (February, 1931), 37-70.

A statistical study of growth curves in which the author shows that the average of a series of individual growth curves may differ in certain fundamental characteristics from the separate curves.

PETERS, C. C., AND MARTZ, H. B. "A Study of the Validity of Various Types of Examinations," *School and Society*, XXXIII (March 7, 1931), 336-338.

A study of the validity of various types of examinations: true-false, multiple-choice, essay discussion, completion, etc., in which the author shows that the different tests do not vary greatly in validity.

STEPHENSON, WILLIAM. "Tetrad-Differences for Non-Verbal Subtests," *Journal of Educational Psychology*, XXII (March, 1931), 167-185.

The author shows that the *g*-factor hitherto observed for non-verbal subtests for small populations obtains for large populations.

WILKS, SAMUEL S. "The Standard Error of the Means of 'Matched' Samples," *Journal of Educational Psychology*, XXII (March, 1931), 205-208.

The author presents mathematical derivation for the standard error of the means of matched samples.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Editor Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Request for Research News.—This department is interested in a variety of research information:

Educational yearbooks in progress.

School surveys and testing programs.

School and laboratory experiments.

Curriculum studies and reorganizations.

New educational periodicals.

New research and professional organizations.

Annual reports of educational organizations.

Research programs of bureaus, universities, foundations, etc.

Research conferences and meetings.

Educational statistics.

Your coöperation in making possible this service to research workers and educational investigators is invited. Please keep a given report within 300 words. If available, a printed, mimeographed, or typed copy of the project reported will be useful.

The editors have under consideration preparation of an annual bibliography on "Techniques of Educational Research and Related Problems" such as was published in the October, 1930, issue of the *Journal*. They also contemplate publication of an annual or biennial list of Doctors' theses under way in education, such as appeared in the January, 1931, number. Your reaction concerning the desirability of these two projects will be appreciated.

Yearbook on the Activity Program.—The yearbook on the activity curriculum in the elementary school, under preparation for the National Society for the Study of Education, is to be ready for publication this fall and to be reported upon at the next February meeting. It is to be limited to two hundred printed pages. The work is well under way. The report will involve analysis and criticism rather than experimental research.

The members of the committee are Dr. Adelaide M. Ayer, Director of Training, State Teachers College, Milwaukee, Wisconsin; Professor F. G. Bonser, Teachers College, Columbia University, chairman; Assistant Superintendent Mildred English, Raleigh, North Carolina; Dean W. S. Gray of the University of Chicago; Superintendent E. E. Oberholtzer, Houston, Texas; and Director E. M. Sipple, Park School, Baltimore, Maryland.

School Buildings Yearbook.—The yearbook on school buildings which is being prepared under the auspices of the National Society for the Study of Education is under way and is due for issue in 1933. The membership of the committee is gradually being formed and some members are already at work. The complete membership will be announced shortly. The chairman is N. L. Engelhardt of Columbia University. The work of this yearbook will not be concerned with what are known as school building standards, but will be centered around the architectural, contractual, and supervisory aspects of school construction. In other words, the committee will enter a

field in which very little has been done and where only a small amount of literature is available for the school practitioner.

Yearbook on International Education.—The countries covered in the next volume of the educational yearbook of the International Institute of Teachers College probably will be Argentina, Australia, Austria, Belgium, Chile, Czechoslovakia, England, France, Germany, Hungary, Italy, Japan, Poland, Russia, South Africa, Sweden, and the United States. There will be no general articles dealing with the educational systems of the various countries as in past volumes. Each chapter will be concerned with the problem of the expansion of secondary education. The volume will be published by the Bureau of Publications of Teachers College in the early summer.

North Central Association's Study of Standards.—In 1913, the North Central Association of Colleges and Secondary Schools issued its first list of accredited colleges based on a set of standards which previously had been adopted. The list includes seventy-eight institutions. Since that time the number of accredited higher institutions has increased to 279, including colleges and universities, teacher-training institutions, and junior colleges. The territory covered by the Association reaches from Ohio and West Virginia in the east to Arkansas, Oklahoma, New Mexico, Arizona, Colorado, Wyoming, and Montana in the south and west.

Without question the Association has done a remarkable piece of work in identifying the higher institutions which are generally acceptable and in stimulating others to attain comparable standards. This group for some time, however, has been keenly aware that the present type of standards used in the accrediting of higher institutions is not satisfactory. In general these standards are based on requirements relative to the physical machinery of an institution and its human resources, including faculty and students expressed in terms of their degrees, hours of teaching, entrance units, size of classes, and semester hours of credit. Except in an indirect way, these standards do not measure the accomplishments, quality, or product of an institution. Until the criteria employed are of such a nature as to accomplish this purpose they obviously will be very deficient in a number of ways.

Accordingly, a Committee on Revision of Standards was appointed in 1929, with President L. D. Coffman of the University of Minnesota as chairman. This committee has been carrying on some preliminary work during the current academic year including the visitation of about a dozen colleges. The Committee realizes that if more satisfactory standards are to be adopted they will have to be validated through scientific study and investigation. Such a study will be both expensive and time consuming.

Therefore, an approach was made to the General Education Board for a grant of funds which would enable the Association to carry on a comprehensive piece of work. The General Education Board has set aside $110,000 to be used over the next five years, provided the Association from its own funds supplements the grant with an annual appropriation of $5,000 for the same period. In this way $135,000 should be available to carry on the work.

It is believed that this study will be of great significance not only to the Association but to all other accrediting agencies throughout the country. Also, in addition to the present system of mini-

mum standards, it is hoped that something can be done to stimulate and encourage institutions already accredited to reach higher levels of effectiveness through criteria which are progressive in character.

More detailed plans for the conduct of the study were discussed at the annual meeting of the North Central Association which was held at Chicago, March 18-20. President George F. Zook of the University of Akron is in general charge of the investigation.

Study of the Smaller College.—Following the action taken at the annual meeting of the Association of American Colleges in January, 1930, plans were initiated for the study of "The Smaller College" and its place in the American scheme of higher education, as a service to the members of the Association. As reported in the November, 1930, *Bulletin* of the Association, the original plan was to confine the study to those members of the Association having liberal-arts enrollments of five hundred students or less, and an invitation to participate in the study was extended to those colleges. A number of colleges having over five hundred students also responded and requested inclusion in the survey. A few such institutions have been accepted. At the present time there are 116 colleges coöperating in the study.

The investigation covers the areas of: (1) educational policy, (2) organization and administration, (3) personnel, (4) the "raw material" (student supply) and the "product" (alumni), (5) instructional facilities and techniques, (6) physical plant, (7) financial situation and needs, and (8) such selected areas as student life, religious life, personnel guidance, extra-curriculum activities, enrollment trends, and special activities. Brief detailed schedules formulated in the office of the Association and approved by the Executive Committee have been prepared and sent to the colleges.

Many specific data already have been gathered on boards of control, faculty organization, administrative organization, aims and objectives of the colleges, contributions of the colleges to the community, and on the recognition of the worth and service of the colleges. In a number of the colleges, at their special request, more intensive studies are being made of the composition, background, and attitudes of the freshmen; officers' and faculties' attitudes toward fundamental educational concepts; and the contributions which members of boards of trustees aspire to make to college administration.

As the investigation develops and significant findings come to light, these results are brought to the attention of the colleges, and it is hoped that general analyses of the various areas may be published. As an immediate service growing out of the study, comparable situations in other colleges are brought to the attention of coöperating colleges making local studies of specific problems.

The investigation is under the immediate direction of Archie M. Palmer, the Associate Secretary of the Association of American Colleges, who is assisted by the headquarters staff of the Association and by a group of graduate students working under the supervision of graduate schools of education.

Research Division, N. E. A.—The activities of the Research Division since January 1, 1931, include five projects of interest.

The study ("Ethics in the Teaching Profession," *Research Bulletin*, Vol. IX, No. 1, January, 1931, pp. 92) completed

by Theodore C. Martin, Director of the Division of Records and Membership of the National Education Association, compares programs of instruction in ethics in the training schools of the various professions, such as law, medicine, education, and others. The bulletin also analyzes state and national codes of ethics for teachers, pointing out significant items of resemblance and difference. It analyzes and tabulates, according to type, 1600 reported violations of the ethics of the teaching profession.

"State School Legislation, 1930," is published as Study No. 6 in the series of *Studies in State Educational Administration*. It summarizes important school legislation enacted in the fifteen state legislatures which met during the last year. This report is undertaken annually by the Research Division.

The Research Division has coöperated in an editorial and consultative capacity in connection with the projects of two departments of the National Education Association.

The ninth yearbook of the Department of Superintendence was issued by the Commission on Articulation of that organization. The yearbook carries the title, *Five Unifying Factors in American Education*. It sets forth the way in which practices in pupil promotion, community relationships, the education of teachers, school finance, and educational principles may contribute toward a well-articulated program of education from the kindergarten through adult life.

"The Curriculum" is the theme about which Vol. I, No. 1, of the *Review of Educational Research* is organized. This review is to be published five times a year as the official organ of the American Educational Research Association, a department of the National Education Association. Each number will deal with a single division of the entire field of education. General editorial responsibility for the review is given to the Research Division under the general direction and control of the Editorial Board.

The Research Division also prepared *The Schools and Business*, a twenty-four page pamphlet dealing with the contribution made by education to business stability. It brings together quotations from a large number of recognized economists and political scientists concerning the economic effects of education. This bulletin is finding a wide field of usefulness in meeting some of the attacks on the public school which grow out of the present depression.

Office of Education Studies.—The Office of Education for the past three years has been engaged in collecting and publishing information concerning research studies in education undertaken by all agencies in the United States. At the same time the Research Division of the National Education Association has been collecting and publishing data concerning investigations in education made under the auspices of city school systems, state departments of education, and state education associations. In order to prevent unnecessary duplication of reports from these agencies, it was decided last year, by mutual agreement, that the National Education Association would withdraw from this field and that in the future these lists of research studies would be issued by the Office. Accordingly, in August, 1930, the first list of research studies in city school systems was issued in mimeographed form as Circular No. 18. Circular No. 31, 1931, constitutes the first number in a series to be issued listing research studies undertaken by state departments of education and state education associations. The information

contained therein was obtained primarily from replies received to a letter sent to state departments of education and state education associations in November, 1930. It has been supplemented, however, by such information as was obtainable from other sources. The list contains both studies recently completed and those reported as in progress.

An increase of more than 50 percent has been noted in kindergarten enrollment throughout the United States during the past ten years. Kindergartens are an accepted part of eight out of ten school systems in cities of 30,000 or more population, and in five out of ten cities and towns having populations of 2,500 or more. The average kindergarten child is 5½ years old the latter half of the school year. He is one of a class of fifty-two, taught by one person, and is in school three hours a day. His mental age slightly exceeds his chronological age. The average first-grade pupil is 6½ years old the latter half of the school year, and is in school from four to six hours daily. There are forty in the first-grade class, on the average, taught by one person. More than 2,000 children from two to five years old were in attendance at pre-kindergarten schools when the survey was made. Nearly three and a quarter million children between five and nine years old enrolled in kindergarten-primary schools are represented in the Office of Education study reported by Mary Dabney Davis.

The Office of Education has in press a bibliography entitled, "Twelve Thousand Titles in Higher Education," compiled by H. A. Toops and T. E. Newland of the Ohio State University.

The Educational Directory for the year 1931 is divided into three parts, and lists names, positions, and addresses of nearly 12,000 school officers in the United States. The three parts are: Elementary and Secondary School Systems; Institutions of Higher Education; and Educational Associations, Boards, and Educational Periodicals.

Iowa Child Welfare Research Station.—The Iowa Child Welfare Research Station was established in 1917 by legislative enactment, with the three-fold aim of research, dissemination of knowledge, and instruction. It is an integral graduate department in the State University of Iowa.

Facilities for research in many phases of child development are offered, the principal branches comprising nutrition, anthropometry and physical growth, mental development, mental hygiene, childhood education, parent education, character education, and speech pathology.

There are four separate pre-school laboratories, one each for two-year-olds, three-year-olds, four-year-olds, and five-year-olds which are available for educational research at the pre-school level. Each of these laboratories includes a play room adjoining an outdoor playground, experimental rooms, kitchens, toilet rooms, etc. They contain equipment appropriate to the different age levels. In addition to the children in the pre-school laboratories, normal and superior children are available in the nursery-school groups at Iowa State Teachers College at Cedar Falls, Iowa State College of Agriculture and Mechanic Arts at Ames, in the University Elementary and High Schools, and in various sections of the state.

The research in the field of childhood education is concerned with the educability of the child, methods and materials of instruction, measurement, and super-

vision. Also, it is considered of importance to articulate the work with the early elementary years.

A research committee which includes the head teachers in the various pre-school groups and additional research specialists from the Station staff have attempted to crystallize a definite program of educational studies. Some research problems definitely under way are: (1) "Attitudes of the Three-Year-Old Child Toward Eating," (2) "A Study of the Sleep Habits of Three-Year-Old Children," (3) "A Study of a Child's First Adjustment to a Pre-school Group," (4) "A Study of the Development of Children through Systematic Observations, Tests, and Experiments," (5) "An Analysis of Teachers' Methods in Guiding Individual Children," (6) "Comparison of IQ's of Children Examined before and after Attendance in the Pre-schools," and (7) "Children's Reactions to Each Other When Paired." A manual of nursery school procedures also is being compiled by this committee.

Two recent publications with educational implications may be mentioned. In *Farm Children:* An Investigation of Farm Children in Selected Areas of Iowa, by Bird T. Baldwin, Eva A. Fillmore, and Lora Hadley, the results of extensive research upon two rural communities are presented. The study, *An Experimental Investigation of Social Behavior Patterns in Young Children*, by Esther Van Cleave Berne, reports the construction and use of new rating schemes and experiments in this complex field.

Vineland (N. J.) Training School Research.—In addition to the graduate training of student fellows, and the improvement technically and administratively of the regular clinical examining of the children in the institution, the Research Department has made a distinct effort during 1929-30 to bring to completion and publication numerous research studies made during recent years.

The investigations recently completed or under way include: twenty-nine cases of possible birth injury; studies of idiocy in terms of adaptive behavior, mental examinations, genetic aspects of development, vocabularies, spontaneous activities, movements, emotional reactions, habit formation, and capacity for self help; social adjustment of children discharged from the training school; and improvement of record forms and tests employed. Continued emphasis is being placed on the need for publishing studies already completed. It is considered unwise to develop any considerable number of new investigations when the results of equally important studies have not been made available. The director of research is Edgar A. Doll.

New Hampshire, Oakland, and Sioux City Studies.—The New Hampshire State Board of Education reports the results of tests administered in Grade XII of its standard secondary schools during the spring of the past three years: intelligence, history, and English, 1928; intelligence, civics, and arithmetic, 1929; and intelligence, silent reading, and English, 1930.

The Department of Research of the Oakland, California, schools has issued a low-tenth scholarship report for the term ending December, 1930, and a report of results secured from the Kuhlmann-Anderson Intelligence Test and the Stanford Reading Test in the high sixth grade, fall semester of 1930.

A bulletin of the Sioux City, Iowa, schools reports test results for the first semester of 1930-31 in reading, Stanford

Achievement Test, intelligence, arithmetic, and spelling.

Research in Pittsburgh.—The Pittsburgh Board of Education established a Department of Curriculum Study, Educational Measurement, and Research in 1926 as an integral part of the public school system. The staff at present includes a director, David R. Sumstine, three assistant directors, a librarian, and three clerks. The department is housed in the administration building in three offices and a library en suite. The activities of the department are roughly indicated by its title.

The program of curriculum study includes a continual revision of all courses of study offered in all the public schools of the city. The work is done by committees under the general guidance of the director of the department. These committees are appointed by the superintendent of schools and meet on school time, usually one day each week. The annual school budget contains a sufficient amount to pay substitutes for the members of the committees. All of these meetings are held in the library of the department where all necessary facilities for such work are supplied.

The second phase of the work includes the giving and developing of educational tests. Intelligence tests are administered each semester to all pupils at grade levels 1B, 4B, and 6A. Group intelligence tests are given for the purpose of determining probable rate of learning and for classification. Pupils for mental deviate classes are determined by individual tests. Standardized achievement tests are administered at irregular periods. These tests serve the purpose of diagnosis and survey. Tests have been prepared for general science, elementary science, and primary reading. Other tests are being prepared but at present are not completed.

A third field of activity is research. This work is done either by the members of the staff or in coöperation with some teacher, principal, or group of teachers. All the studies made relate directly or indirectly to curriculum study, supervision, teaching, administration, or child adjustment.

It is not sufficient to have available competent research workers; adequate facilities for carrying on such work also must be provided. In connection with the department there is a professional library in charge of a trained librarian. This library contains about two thousand volumes of the more recent pedagogical books. New books are added continually. Examples of the fields represented by the books purchased are: administration, finance, accounting, high schools, elementary schools, supervision, statistics, measurement, guidance, music, art, physical education, kindergarten, moral education, curriculum study, research, commercial education, and extra-curricular activities. The library also has a large collection of pamphlets, reports, surveys, and courses of study. Sixty educational magazines are received regularly. A card index by subject and author is made of all books and magazines.

In order that the information obtained may be available to the proper persons, mimeographed or printed bulletins are sent directly to the teachers, principals, and administrative staff. There are four types of publications:

1. The library bulletin is issued in mimeographed form twice each month. It contains notices of new books, a list of magazine articles to be read by the staff, and school news.

2. Special mimeographed bulletins are issued at irregular intervals giving ad-

vance information of research work or results of minor experiments.

3. Course of study bulletins are the printed courses of study prepared by committees. Usually two or three such bulletins appear each year.

4. *Pittsburgh Schools* is published bimonthly during the school year. This bulletin contains not only an account of research work, but also articles on various phases of administration, supervision, and instruction. These articles are written by teachers, principals, supervisors, and members of the staff.

Typical problems studied are:

1. High-School Failures and High-School Marks.

2. Survey Test in Reading in the Elementary Schools.

3. A Comparison of the Lecture-Demonstration and the Individual-Laboratory Method.

4. A Study of the Achievement of Pupils in Grades 4B-8A, by means of the Stanford Achievement Tests.

5. A Study of Guidance in the Elementary Schools.

6. Occupational Choices of Negro Youths in Pittsburgh.

7. Relation of the IQ to Success in Learning Typewriting.

8. The Vocational Value of Music to High-School Pupils.

9. Occupational Survey of Commercial Graduates and Drop-Outs in the Pittsburgh High Schools.

10. Survey of Handicapped and Exceptionally Bright Children in our Schools.

11. A Follow-up of the Pupils of Each Graduating Class.

12. A Study of the Utilization of a High-School Building.

Research Division of New York State.—The Educational Research Division is directly responsible to the Commissioner of Education. The problems which it undertakes are largely on its own initiative, but with the approval of the person or persons concerned. The present organization is an outgrowth of work in tests and measurements which was initiated eleven years ago.

The personnel consists of a director, Warren W. Coxe, two research associates, a psychologist, a statistical assistant, a secretary-stenographer, a stenographer, and two clerks. The equipment includes private office for the director, one room for associates and assistants, and one room for clerks and stenographers. The equipment for statistical work consists of Marchant and Monroe calculating machines, a Burroughs adding machine, a slide rule, tables, and a Hollerith machine.

Studies recently completed by the Division are: Trends in Secondary Education in New York State, Clerical Duties of District Superintendents in New York State, A Study of the High-School Teacher in New York State, A Study of the Elementary School Teacher in New York State, Educational Needs of Pupils in Small High Schools of New York State, Analysis of Junior High-School Courses of Study, Financial Reward to Teachers for Summer School Attendance, Bibliography of Research Studies in New York State Completed between September, 1929, and September, 1930, A Beginning Reading Vocabulary for Foreign-Born Adults, and a Special Class Curriculum Study.

Major projects under way are: Entrance Examinations for Teacher-Training Institutions, Evaluation of Normal-School Training, Analysis of Teachers' Salaries in New York State for 1929-30, Community Differences as Evidenced by the Expressed Needs of High-School Pupils, Sociological Justification for Abil-

ity Grouping, The Effect of Trait Differences in Ability Grouping, Kenmore, N. Y., Survey, Inquiry into the Bases for Entrance to New York Colleges and Universities, and Suggestions from Present and Former Students for Desirable High-School Changes.

Studies made by the Division are published in The University of the State of New York bulletins, mimeographed reports, articles in *New York State Education*, and in journals with a national circulation.

The Division at times has coöperated with graduate students in making certain data available. The director occasionally is consulted with regard to choice of research problems. The Division's relationship with the field is largely one of service, including conducting of surveys, speaking at teachers' conferences, and advising with regard to curriculum and school organization.

Research in the Arkansas State Department of Education.—The Arkansas State Department of Education maintains a Division of Research and Surveys, which is under the supervision of the director, Howard A. Dawson, and an assistant director, Harry A. Little. Two full-time stenographers are employed, and additional clerical help occasionally is necessary. This Division was organized in July, 1926, and has been supported since that time by appropriations from the General Education Board; the state will take over its support in 1931. The chief functions of the Division are:

1. Preparation of statistical blanks and forms necessary to secure information concerning educational conditions and activities, and to direct the tabulation, analysis, and dissemination of such information after collected. This information also is used as a basis for some research studies. The blanks and forms include sources of original data such as teachers' registers, reports of county superintendents, and official records for city superintendents, county superintendents, and county treasurers, as well as forms on which these officers report to the state department of education.

2. Conduct of educational research both upon its own initiative and in coöperation with other divisions in the state department of education. Many research problems arise in connection with the work of other divisions. In such cases expert assistance is given in outlining the problems and methods of attack, the results usually being published under joint authorship with the head of some other division.

3. Encouragement of educational institutions, graduate students, superintendents, teachers, and principals in undertaking research studies and in initiating educational experiments. Coöperation, assistance, and direction are given in conducting such work.

4. Conduct of practical research rather than pure research. Most of the problems investigated to date are concerned with administrative matters.

Certain studies have been completed and the results put into operation:

1. A new system of state records and reports dealing with child and financial accounting.

2. A plan for an equalizing fund and its administration.

3. An administrative and financial survey of the school systems of each of the seventy-five counties, which has formed the basis of an extensive consolidation program that has been under way for the past two years.

4. An investigation of the administration and cost of public transportation of pupils to school.

Bulletins and pamphlets have been published as follows:

1. Financial Support of Education in Arkansas.
2. Larger School Units for Arkansas.
3. Public Transportation of School Children in Arkansas.
4. Financial and Administrative Needs of the Public Schools of Arkansas.
5. An educational survey of each of the seventy-five counties in Arkansas.
6. Handbook for use in a campaign to increase the constitutional school tax.
7. Handbook for use in a campaign to secure revenue for the equalizing fund.
8. School code for Arkansas.
9. Numerous newspaper articles on the different aspects of the public-school program, chiefly for purposes of publicity.

The problems for investigation in the immediate future are concerned with an analysis of the cost of different school functions and establishment of cost standards for use in making budgets and spending money so as to result in maximum returns; and analysis of problems, selection of techniques of research, and conduct of experiments in the field of supervision.

State Aid in Indiana.—The Commission for a Survey of the Problem of State Aid for Public Schools in Indiana, appointed in December, 1929, published i report early in 1931 in a bulletin of si pages. The state superintendent of pu lic instruction acted as secretary of t Commission. Assistance was given by l office, the State Board of Accounts, t Bureau of Coöperative Research of I diana University, and the Division Research of Indiana State Teache College.

Abstract of Theses.—Bulletin No. 1931, of the Department of Secondar School Principals of the N. E. A. is summary of unpublished Masters' thes in the field of secondary school admini tration completed at the University Southern California. The work of co pilation was directed by F. C. Touton the same institution.

Additional Doctors' Theses.—Supp mentary to the list of Doctors' dissert tions under way in education, which a peared in the January number, are:

R. W. Edmiston, "Overlapping in S ence." Ohio State. Osburn.

J. L. Hupp, "The Administration of t Curriculum in United States History Ohio State. Osburn.

Sister Leonita Mulhall, "Genesis a Growth of the Progressive Moveme in Education." Cincinnati. Streit